

# START 3

Superfund Technical Assessment and Response Team 3 –  
Region 8

1259912 - R8 SDMS



United States  
Environmental Protection Agency  
Contract No. EP-W-05-050

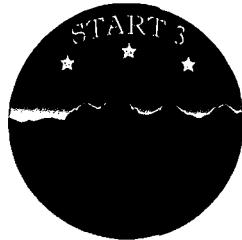
## ANALYTICAL RESULTS REPORT for SITE REASSESSMENT

UPPER ANIMAS MINING DISTRICT  
Silverton, San Juan County, Colorado

## APPENDICES

TDD No. 1008-13

August 10, 2011



**URS**  
OPERATING SERVICES, INC.

In association with:

TechLaw, Inc.

LT Environmental, Inc.

TN & Associates, Inc.

Garry Struthers Associates, Inc.

## **APPENDIX A**

### **Sampling Activities Trip Report (Includes Project Photolog)**

# URS OPERATING SERVICES

1099 18TH STREET  
SUITE 710  
DENVER, COLORADO 80202-1908  
TEL: (303) 291-8200  
FAX: (303) 291-8296

January 10, 2011

Ms. Sabrina Forrest  
U.S. Environmental Protection Agency, Region 8  
Mail Code: 8EPR-B  
1595 Wynkoop Street  
Denver, Colorado 80202-1129

**SUBJECT:** START 3, EPA Region 8, Contract No. EP-W-05-050, TDD No. 1008-13  
Trip Report, Upper Animas Mining District, Silverton, San Juan County, Colorado

Dear Ms. Forrest:

Attached is one copy of the trip report for sampling activities conducted for the Upper Animas Mining District Site Reassessment. Activities included surface water, sediment, and soil sampling. Field activities were conducted from October 25, 2010 through November 1, 2010. This document is submitted for your approval.

If you have any questions, please call me at 303-291-8264.

Sincerely,

URS OPERATING SERVICES, INC.



Megan Dudevoir  
Project Manager

cc: Charles W. Baker/UOS (w/o attachment)  
File/UOS

EPA ACTION BLOCK	
<input checked="" type="checkbox"/>	Approved <i>[Signature]</i>
<input type="checkbox"/>	Approved, TDD to follow.
<input type="checkbox"/>	Approved as corrected
<input type="checkbox"/>	Disapproved
<input type="checkbox"/>	Review with _____
<input type="checkbox"/>	Original to _____
<input type="checkbox"/>	Copy to _____
<input type="checkbox"/>	Reply envelope enclosed

*01/18/11 S. Forrest*  
Date By

**TRIP REPORT**  
**Upper Animas Mining District**  
**Silverton, San Juan County, Colorado**

**1.0 INTRODUCTION**

URS Operating Services, Inc. (UOS), was tasked by the Environmental Protection Agency (EPA), under the Superfund Technical Assessment and Response Team 3 (START) contract # EP-W-05-050 Technical Direction Document (TDD) No. 1008-13, to conduct a site reassessment (SR) at the Upper Animas Mining District site. Specifically, START was tasked to collect as many as 69 surface water samples, 61 sediment samples, and 36 source soil samples, including QA/QC samples. Field activities were completed in accordance with the approved Field Sampling Plan (FSP) (UOS 2010). During the field sampling event 54 surface water samples, 54 sediment samples, and 14 source soil samples were collected; these sample numbers include field duplicate samples.

The site is located in Silverton, San Juan County, Colorado and is made up of publically and privately owned parcels. The investigation focused on the Animas River between U.S. Geological Survey (USGS) gauging stations A72 and A68, Mineral Creek immediately upstream of the Animas River, Cement Creek, and tributaries to Cement Creek (Figure 1) (UOS 2010).

Site activities were conducted from October 25, 2010 through November 1, 2010 and included sample collection along with photo documentation, GPS documentation, and in situ water parameter collection. All water samples were submitted to the EPA Region 8 Environmental Services Assistance Team (ESAT) laboratory for Target Analyte-List (TAL) metals analysis. Additionally, sediment samples were submitted to a Contract Laboratory Program (CLP) laboratory for TAL metals and poly-chlorinated biphenyl (PCB) analysis.

**2.0 BACKGROUND**

Mines in the Silverton area operated between the years 1874 and 1991. Mining activities in the Upper Animas basin, including Cement Creek, produced the waste rock and mill tailings sources from which contamination spread throughout the surface water pathway. This site assessment focused on Cement Creek, a major source of metals contamination to the Animas River.

Thirty-three individual sources of mine wastes have been identified in the Cement Creek drainage, totaling approximately 188,000 cubic yards (UOS 2009). Several investigations have been conducted in the Cement Creek basin by the Colorado Department of Public Health and the Environment (CDPHE),

but data were not appropriate for evaluating the site based on HRS criteria. Several sources of mine waste have been reclaimed to some degree through work carried out by the Bureau of Land Management (BLM), the CDPHE, the Colorado Division of Reclamation Mining and Safety (DRMS), and the Animas River Stakeholders Group (ARSG). The reclaimed waste areas are primarily in gulches that feed into lower Cement Creek. Most of the sources of mine wastes in the Upper Cement Creek basin remain in place. The wastes are rich in arsenic, cadmium, copper, lead, manganese, and zinc.

During the October 2010 sampling event, START aimed to characterize the impact of most tributaries on Cement Creek, and the impact of Cement Creek on the Animas River.

The purpose of this SR sampling event was to assist the Region 8 EPA in gathering data to determine whether this site should be considered for National Priority List (NPL) listing.

### **3.0 SITE ACTIVITIES**

START members Megan Dudevoir, Bryan Williams, Andrew Longworth, and Nathan Williams mobilized to the site on October 25, 2010. START members collected 50 surface water samples, 54 sediment samples, 14 soil samples, and 4 adit water samples over the course of 8 days. The location of each sample was documented by collecting a GPS point. All sample locations, parameters, collection time, and collection date were entered into a site database. Sample containers were labeled, placed in coolers with ice, and kept under chain of custody. In the first 2 days of sampling, October 25 and 26, 2010, the temperatures were below freezing for the entire day, and snow fell throughout the day. In the higher elevations, as much as 1.5 feet of snow fell. In the remaining days of the field event, mid-day temperatures exceeded 32 degrees and START observed snow melt running into Cement Creek and its tributaries.

Site photos are provided in Appendix A.

### **4.0 SAMPLING AND ANALYSIS**

Samples were collected in accordance with the approved FSP, with exceptions and justifications noted in Section 5.0 of this report. START personnel collected three duplicate and Matrix Spike/Matrix Spike Duplicate (MS/MSD) samples for water and soil/sediment. Duplicate and MS/MSD samples were collected for samples UASW005, UASE005, UASW019, UASE019, UASW035, and UASE035. Surface water samples were hand-delivered to the EPA Region 8 ESAT Laboratory located in Golden, Colorado,

on November 2, 2010. Sediment and soil samples for PCB and total metals analysis were shipped via FedEx to the following CLP laboratory on November 2, 2010:

ALS Laboratory Group  
960 West LeVoy Drive  
Salt Lake City, Utah, 84123

Samples were received in good condition with custody seals intact. Approximate sample locations are illustrated in Figures 2 and 3 of the approved FSP.

#### **4.1 SOIL SAMPLING**

Soil samples were collected for total metals and PCB analysis. All of the soil samples were source samples and were collected in accordance with procedures described in UOS TSOP 4.16, “Surface and Shallow Depth Soil Sampling” (UOS 2005). Dedicated, disposable plastic scoops were used for source sample collection. All source samples were collected as biased grab samples from the 6- to 12-inch depth interval, with the exception of UASO001 and UASO002, which are described in Section 5.0 of this report. A sharp shooter shovel was used to accomplish the depth needed for the sample and was decontaminated between samples. Soil samples for total metals analysis were placed in 8-ounce high density polyethylene (HDPE) jars. Soil samples for PCB analysis were placed in 8-ounce amber glass jars. All samples were labeled with the sample identification number and stored in a cooler on ice pending shipping to the laboratory. Sample descriptions were logged in the field log book. A GPS point and photograph were collected for each sample location.

#### **4.2 SURFACE WATER SAMPLING**

Surface water samples (including adit water) were collected for total and dissolved metals analysis. Surface water sampling for total metals was conducted by facing upstream and immersing the 500 mL HDPE sample bottle directly into the sample media. Surface water sampling for dissolved metals was conducted by immersing a length of HDPE tubing in the sample media. Water was drawn through a 0.45 micron filter and into the 500 mL HDPE sample bottle using a peristaltic pump. Sample bottles and filters were certified pre-cleaned by the provider, and water was drawn through the tubing and discarded prior to sample collection to ensure contamination was not introduced by sampling supplies. Samples were preserved with nitric acid. UOS measured field parameters, including pH, temperature, and electrical

conductivity, of each sample. Field instrumentation was calibrated daily, and all calibration and field data was recorded in the field log book. Sampling was conducted from the farthest downstream location to the farthest upstream location to minimize the potential for cross-contamination. All surface water sample locations were photographed, recorded with GPS, and documented in the field log book during sampling activities.

#### **4.3 SEDIMENT SAMPLING**

Sediment samples were collected for total metals and PCB analysis. Sediment sampling was conducted according to UOS TSOP 4.17, “Sediment Sampling” (UOS 2005). Sediment sampling locations corresponded to surface water sampling locations and were collected immediately after the surface water sample was collected, proceeding from the most downstream location to the most upstream location. START attempted to collect primarily fines and avoid gravel, but in some locations fines were not readily available, and the sample contained some larger grains or gravel. Sediment samples were collected using a disposable, dedicated scoop. Total metal samples were placed into 8-ounce HDPE jars, and PCB samples were placed in 8-ounce amber glass jars. Sediment samples were labeled and stored in a cooler on ice pending shipping to the laboratory. All sediment sample locations were photographed, recorded with GPS, and documented in the project log book during sample activities.

#### **5.0 FIELD SAMPLING PLAN DEVIATIONS**

The following deviations from the FSP were made in the field based on assessments made by the START project manager and field team members:

- Samples UASW038 and UASE038 (Illinois Gulch) were not collected because the confluence of Illinois Gulch and Cement Creek was located on private property for which START did not have an access agreement.
- Samples UASW048 and UASE048 (Elk Tunnel discharge) were not collected because START personnel could not identify any flow from Elk Tunnel.
- Samples UASW051 and UASE051 (Mammoth Tunnel discharge) were not collected because START personnel could not identify any flow from Mammoth Tunnel.

- Samples UASW053 and UASE053 (Cement Creek downstream of Prospect Gulch) were not collected because they were located on private property for which START did not have an access agreement.
- Samples UASW055 and UASE055 (Cement Creek upstream of Prospect Gulch) were not collected because they were located on private property for which START did not have an access agreement.
- Samples UASW057 and UASE057 (Dry Gulch discharge) were not collected because START personnel could not identify any flow from Dry Gulch.
- The planned location for samples UASW011 and UASE011 was below all of the Gold King 7 Level waste piles. These samples were instead collected where runoff from the upper piles crosses the mine access road. The planned location could not be safely accessed at the toe of the lower piles due to an extremely steep slope, loose material, and snow.
- In addition to adit water, sediment samples were collected from adit discharge points, as START determined it would provide additional information.
- Fewer soil samples than planned were collected. START personnel dug below snow in several locations on each pile and preformed XRF analysis of the driest soil in the hole. In-situ XRF analysis showed waste piles were more homogeneous than expected, so the number of samples required for characterization was reduced. Sample location identification numbers for soil samples were changed in the field to number them sequentially as they were collected. Soil sample identifications are as follows
  - UASO01: American Tunnel
  - UASO02: American Tunnel
  - UASO03: Red and Bonita Mine – top pile
  - UASO04: Red and Bonita Mine – middle pile
  - UASO05: Red and Bonita Mine – bottom pile
  - UASO06: Mogul North Mine waste pile
  - UASO07: Grand Mogul stope – west side
  - UASO08: Grand Mogul stope – east side

- UASO09: Grand Mogul Mine waste piles – east side
- UASO10: Grand Mogul Mine waste piles – center
- UASO11: Grand Mogul Mine waste piles – west side
- UASO12: Mogul Mine waste piles – west side
- UASO13: Mogul Mine waste piles – adjacent to shed
- UASO14: Mogul Mine waste piles – east side
- Soil samples collected in the vicinity of the American Tunnel, UASO001 and UASO002, were obtained from 0 to 1 inch because the ground was frozen and the planned depth of 6 inches could not be obtained.
- Soil samples were not collected at the Gold King 7 Level Mine because the waste piles for which START had an access agreement could not be accessed due to unsafe conditions, including extremely steep slope, loose waste rock material, and snow.
- A sediment sample for PCB analysis was not collected at UASE059 (at the toe of Grand Mogul Mine) because there was not enough sediment available for both metals and PCB analysis. Metals analysis was deemed more critical to project goals.
- A sediment sample for PCB analysis was not collected at UASE012 (above Gold King 7 Level Mine) because there was not enough sediment available for both metals and PCB analysis. Metals analysis was deemed more critical to project goals.
- A sediment sample for PCB analysis was not collected at UASE030 (Cement Creek upstream of Grand Mogul Mine) because there was not enough sediment available for both metals and PCB analysis. Metals analysis was deemed more critical to project goals.
- Sample AD005 was not collected because there is no adit discharge from Grand Mogul Mine.
- Surface water and sediment samples were not collected at locations 025, 026, 027, 028, and 031 because START was not able to reach the highest elevations due to snowy and potentially unsafe conditions.
- Soil samples were not collected from the Queen Anne Mine, the Adelphin Mine, and the Columbia Mine because START was not able to reach the highest elevations due to snowy and potentially unsafe conditions.

## 6.0 LIST OF REFERENCES

URS Operating Services, Inc. (UOS). 2005. "Technical Standard Operating Procedures for the Superfund Technical Assessment and Response Team (START), EPA Region 8."

URS Operating Services, Inc. (UOS). 2009. "Data Gap Analysis Report for Targeted National Priority Listing: Upper Animas Mining District San Juan County Colorado." October 13, 2009.

URS Operating Services, Inc. (UOS). 2010. "Field Sampling Plan: Upper Animas Mining District San Juan County Colorado." October 21, 2010.

## **APPENDIX A**

### **Photolog**



Photo 1  
Collection of UASW029 and UASE029 (Animas River downstream of Silverton).



Photo 2  
Collection of UASW032 and UASE032 (Animas River downstream of Mineral Creek).

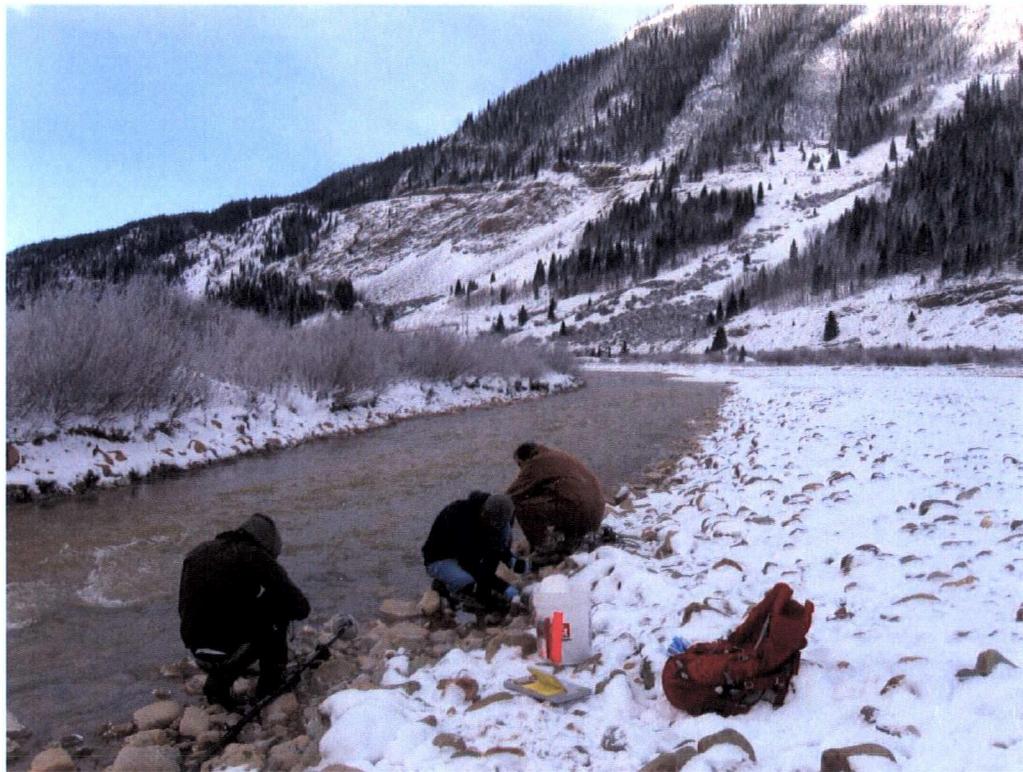


Photo 3

Collection of UASW034 and UASE034 (Animas River upstream of Mineral Creek).

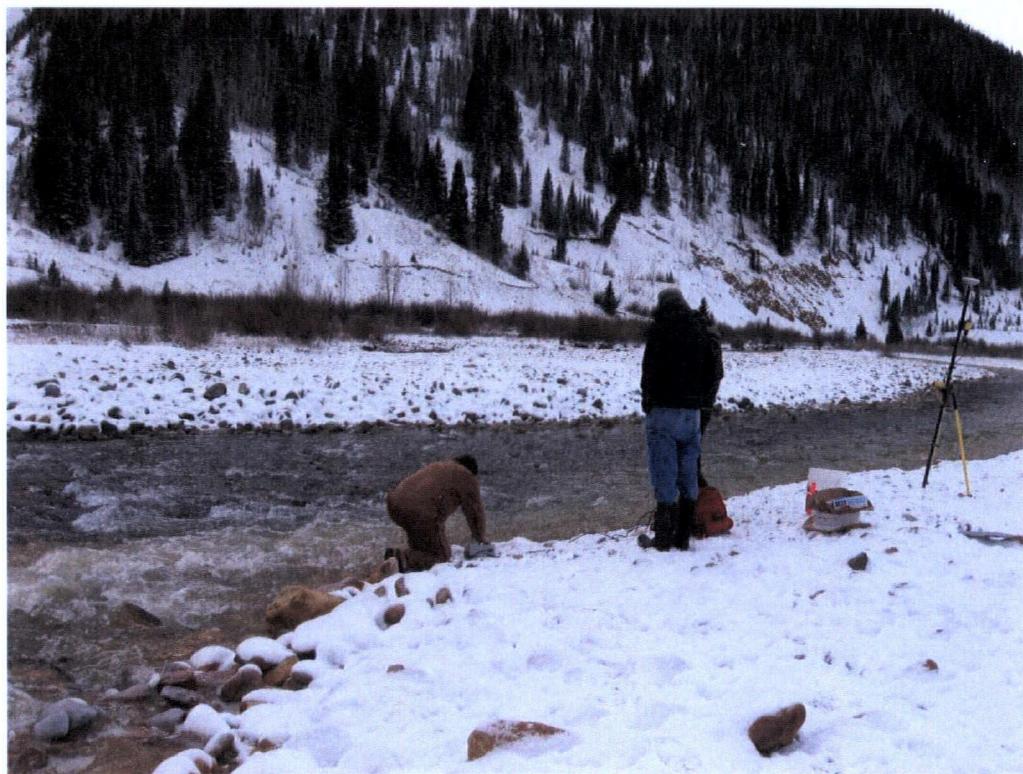


Photo 4

Collection of UASW001 and UASE001 (Animas River downstream of Cement Creek).



Photo 5  
Collection of UASW002 and UASE002 (Cement Creek upstream of Animas River).

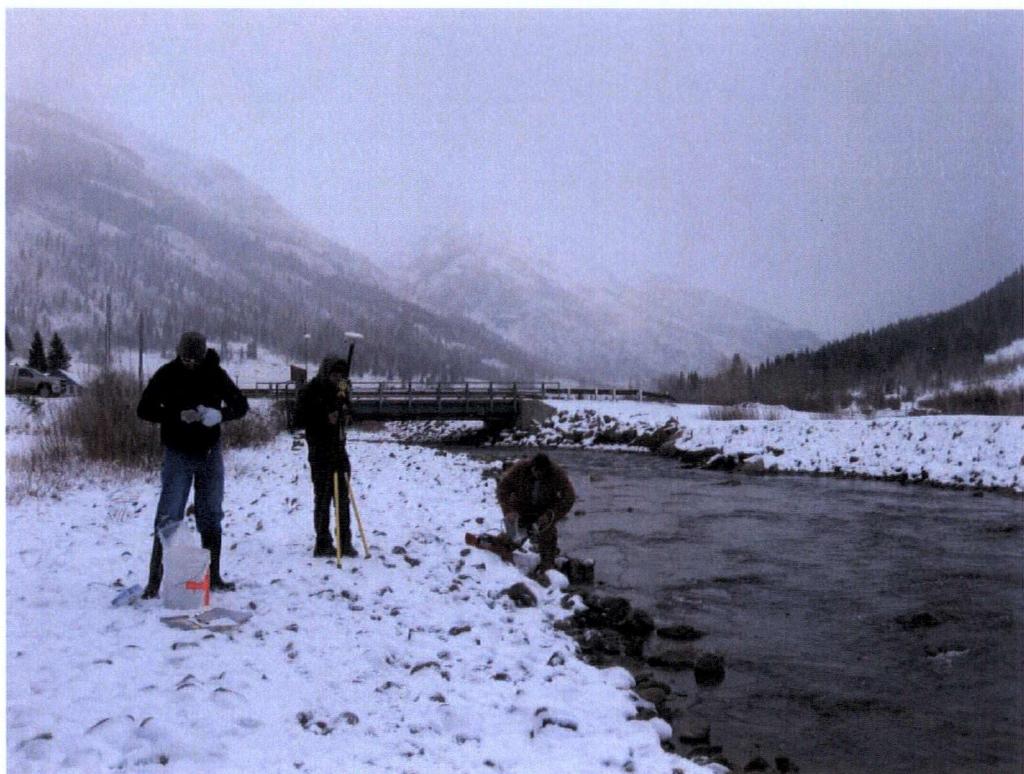


Photo 6  
Collection of UASW003 and UASE003 (Animas River upstream of Cement Creek).



Photo 7

Collection of UASW035 and UASE035 (Cement Creek downstream of Kendrick Smelter).

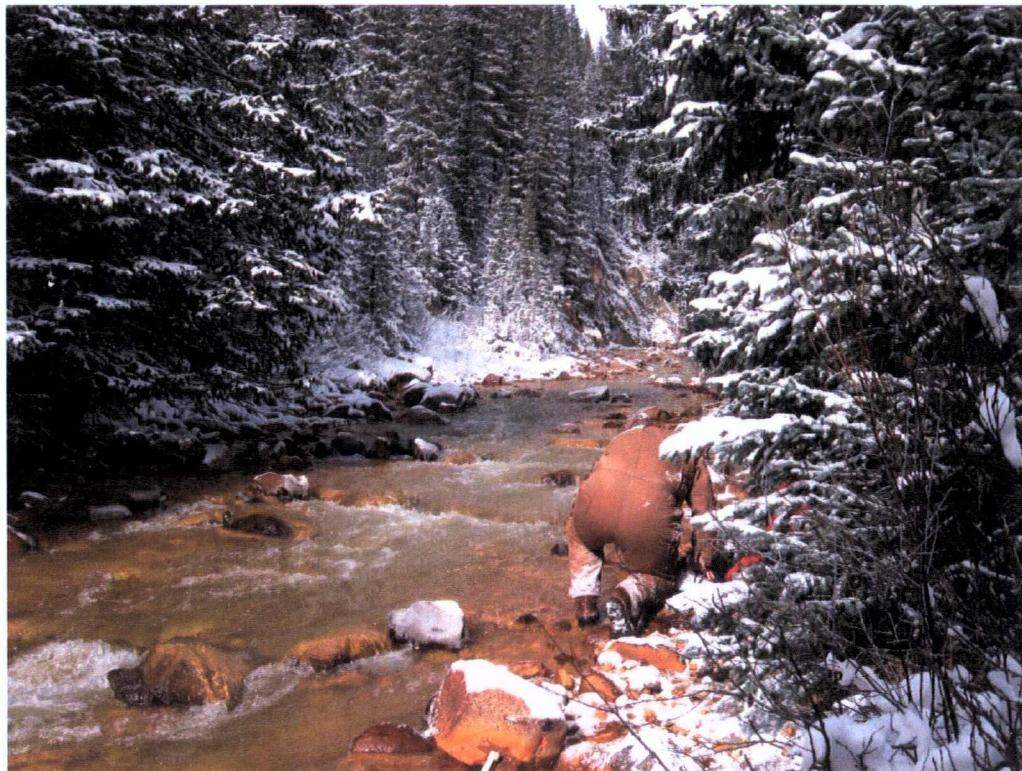


Photo 8

Collection of UASW036 and UASE036 (Cement Creek upstream of Kendrick Smelter).



Photo 9  
Collection of UASW037 and UASE037 (Cement Creek downstream of Illinois Gulch).

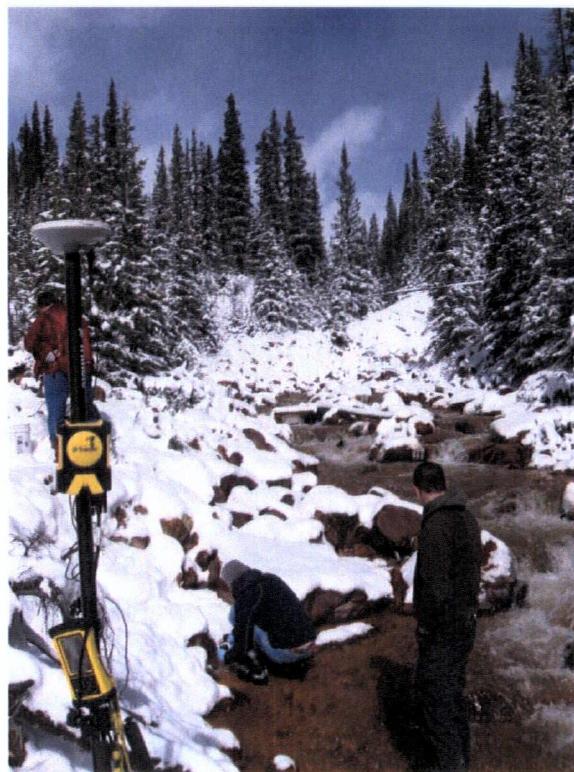


Photo 10  
Collection of UASW039 and UASE039 (Cement Creek upstream of Illinois Gulch, and downstream of Ohio Gulch).



Photo 11  
Location of UASW040 and UASE040 (Ohio Gulch discharge).



Photo 12  
Collection of UASW041 and UASE041 (Cement Creek upstream of Ohio Gulch).



Photo 13  
Collection of UASW042 and UASE042 (Cement Creek downstream of Anglo Saxon Mine).



Photo 14  
Collection of UASW044 and UASE044 (Cement Creek upstream of Anglo Saxon Mine and downstream of Minnesota Gulch).



Photo 15  
Collection of UASW043 and UASE043 (discharge from Anglo Saxon Mine).



Photo 16  
Collection of UASW045 and UASE045 (discharge from Minnesota Gulch).



Photo 17

Collection of UASW046 and UASE046 (Cement Creek upstream of Minnesota Gulch).



Photo 18

Collection of UASW047 and UASE047 (Cement Creek downstream of Elk Tunnel and Fairview Gulch).



Photo 19  
Collection of UASW049 and UASE049 (Cement Creek downstream of Georgia Gulch).



Photo 20  
Collection of UASW050 and UASE050 (Cement Creek upstream of Georgia Gulch).



Photo 21  
Collection of UASW054 and UASE054 (discharge from Prospect Gulch).



Photo 22  
Collection of UASW056 and UASE056 (Cement Creek downstream of Dry Gulch).



Photo 23  
Collection of UASW058 and UASE058 (Cement Creek upstream of Dry Gulch).



Photo 24  
Collection of UASW004 and UASE004 (Cement Creek downstream of the confluence with the south fork of Cement Creek).



Photo 25  
Collection of UASW006 and UASE006 (Cement Creek upstream of the confluence with the south fork of Cement Creek).



Photo 26  
Collection of UASW005 and UASE005 (south fork of Cement Creek).



Photo 27  
Collection of UASW007 and UASE007 (American Tunnel discharge, immediately upstream of Cement Creek).



Photo 28  
Collection of UAAD001 (discharge from the American Tunnel).



Photo 29

Collection of UASW008 and UASE008 (Cement Creek upstream of the American Tunnel).



Photo 30

Collection of UASW009 and UASE009 (Cement Creek downstream of the confluence with the north fork of Cement Creek).



Photo 31

Collection of UASW013 and UASE013 (Cement Creek upstream of the confluence with the north fork of Cement Creek).



Photo 32

Collection of UASW010 and UASE010 (north fork of Cement Creek).



Photo 33  
Collection of UASW014 and UASE014 (Cement Creek downstream of Red and Bonita Mine).



Photo 34  
Collection of UASW015 and UASE015 (roadside channel below Red and Bonita Mine).

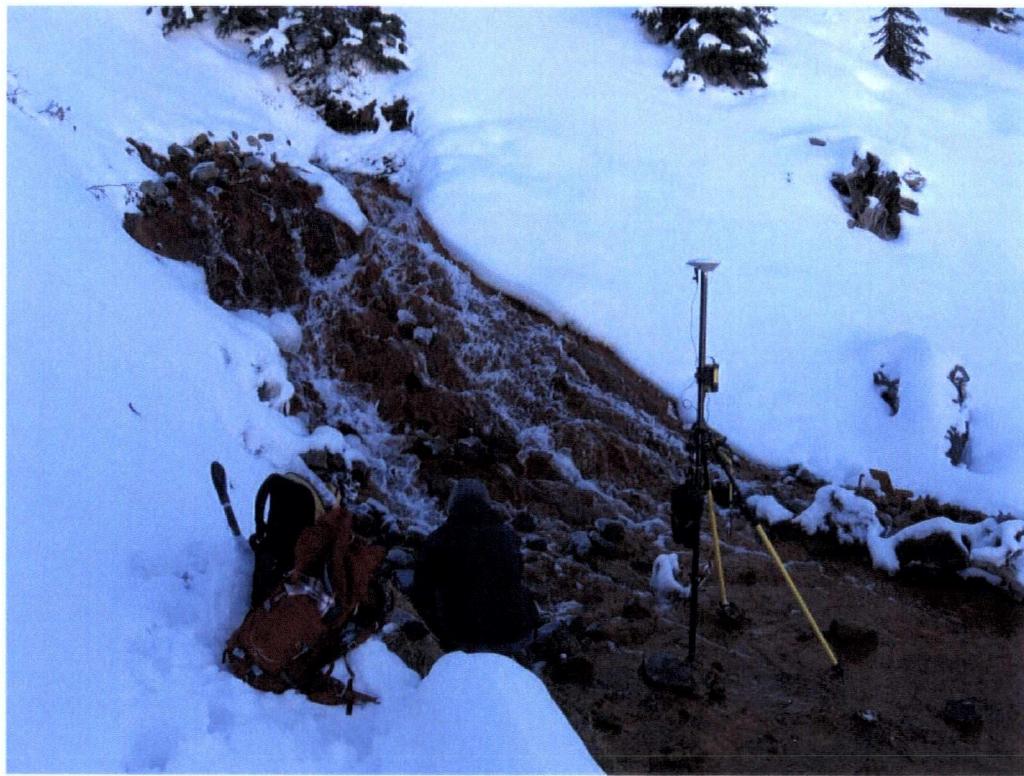


Photo 35  
Collection of UAAD003 and UAAD003 (Red and Bonita Mine adit).

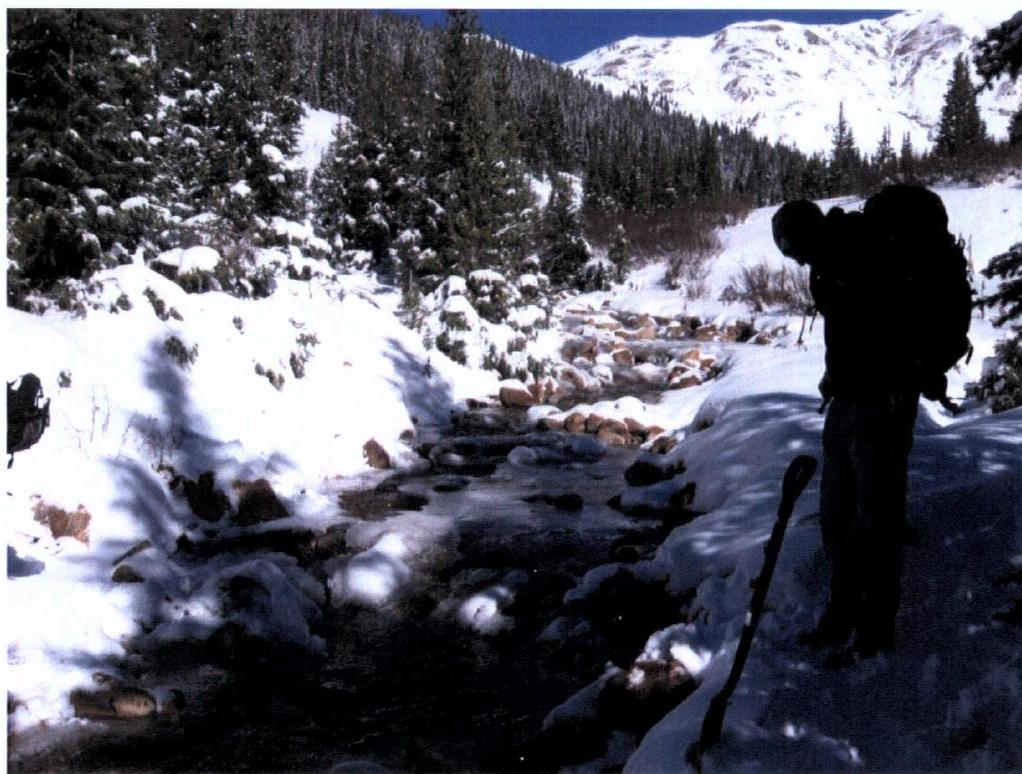


Photo 36  
Collection of UASW016 and UASE016 (Cement Creek upstream of Red and Bonita Mine).



Photo 37  
North fork of Cement Creek – flow is low and area is mostly frozen over.



Photo 38  
Collection of UAAD002 (Gold King 7 Level adit).



Photo 39

Collection of UASW011 and UASE011 (north fork of Cement Creek downstream of Gold King 7 Level Mine – at road crossing).

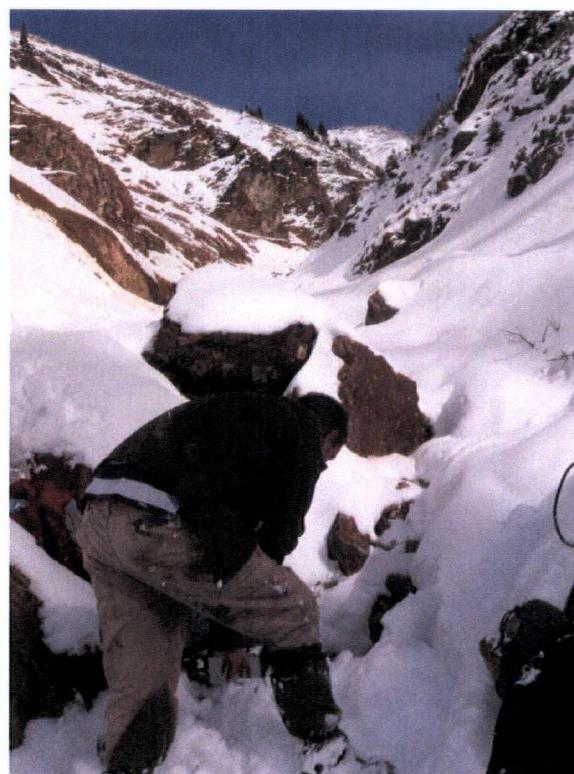


Photo 40

Collection of UASW012 and UASE012 (north fork of Cement Creek upstream of Gold King 7 Level Mine).



Photo 41

Location of UASW017 and UASE017 (Cement Creek downstream of Mogul Mine wetland).



Photo 42

Collection of UASW019 and UASE019 (flow through Mogul Mine wetland).



Photo 43

Collection of UASW018 and UASE018 (Cement Creek upstream of Mogul Mine wetland).



Photo 44

Collection of UASW018 and UASE018 (Cement Creek upstream of Mogul Mine wetland).



Photo 45  
Collection of UASW020 and UASE020 (Cement Creek upstream of Mogul Mine).



Photo 46  
Collection of UAAD004 (Mogul Mine adit discharge).



Photo 47  
Collection of UASO002 (American Tunnel).



Photo 48  
Collection of UASO003 (top pile at Red and Bonita).



Photo 49  
Collection of UASO004 (middle pile at Red and Bonita).



Photo 50  
Collection of UASO005 (bottom pile at Red and Bonita).



Photo 51  
Red and Bonita waste piles.



Photo 52  
Collection of UASW021 and UASE021 (Cement Creek downstream of Mogul North Mine).



Photo 53  
Collection of UASW022 and UASE022 (drainage from of Mogul North Mine).



Photo 54  
Collection of UASO006 (Mogul North waste pile).



Photo 55  
Seepage from the toe of the Mogul North waste pile.



Photo 56  
Collection of UASW023 and UASE023 (Cement Creek upstream of Queen Anne Mine).



Photo 57  
Collection of UASW024 and UASE024 (drainage from Queen Anne Mine).



Photo 58  
Collection of UASO007 (Grand Mogul Mine stope – west side).



Photo 59  
Collection of UASO008 (Grand Mogul Mine stope – east side).



Photo 60  
Collection of UASW059 and UASE059 (drainage from Grand Mogul Mine).



Photo 61  
Sample team hiking above Grand Mogul Mine.



Photo 62  
Collection of UASW030 and UASE030 (Cement Creek upstream of Grand Mogul Mine).



Photo 63  
Grand Mogul Mine and Mogul Mine stope waste piles.



Photo 64  
Grand Mogul Mine easternmost waste pile.



Photo 65  
Collection of UASO009 (Grand Mogul Mine waste piles – east side).



Photo 66  
Collection of UASO010 (Grand Mogul Mine waste piles – center).



Photo 67  
Collection of UASO011 (Grand Mogul Mine waste piles – west side).



Photo 68  
Collection of UASO012 (Mogul Mine waste piles – west side).



Photo 69  
Collection of UASO013 (Mogul Mine waste piles – adjacent to shed).



Photo 70  
Collection of UASO014 (Mogul Mine waste piles – east side).



Photo 71  
Mogul Mine waste piles.



Photo 72  
Treatment pond in the vicinity of the Mammoth Tunnel.



Photo 73  
Runoff entering treatment pond in the vicinity of the Mammoth Tunnel.



Photo 74  
Steep slope of Gold King 7 Level waste piles.

## **APPENDIX B**

**Data Validation Packages:  
Form I Data Sheets and Chain of Custody Forms**

**REGION VIII**  
**DATA VALIDATION REPORT**  
**INORGANIC**

Case/TDD No.	Site Name	Operable Unit	
40755 / 1008-16	Upper Animas Mining District		
RPM/OSC Name			
Sabrina Forrest			
Contractor Laboratory	Contract No.	SDG No.	Laboratory DPO/Region
ALS Laboratory Group	EPW05026	MH35G5	

Review Assigned Date: December 15, 2010 Data Validator: Fred Luck  
Review Completion Date: February 18, 2011 Report Reviewer: Lesley Boyd

Sample ID	Matrix	Analysis
MH35G5	Sediment	CLP -Metals
MH35G6		
MH35G7		
MH35G8		
MH35G9		
MH35H0		
MH35H1		
MH35H2		
MH35H3		
MH35H4		
MH35H5		
MH35H6		
MH35H8	Mine Sediment	
MH35H9		

Sample ID	Matrix	Analysis
MH35J0	Sediment	CLP -Metals
MH35J1		
MH35J2	Mine Sediment	
MH35J3	Sediment	
MH35J4	Soil - Surface	
MH35J5		

## DATA QUALITY STATEMENT

- Data are ACCEPTABLE according to EPA Functional guidelines with no qualifiers (flags) added by the reviewer.
- Data are UNACCEPTABLE according to EPA Functional Guidelines.
- Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X \_\_\_\_\_

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X \_\_\_\_\_ If yes, list the items that require attention:

**INORGANIC DATA VALIDATION REPORT****REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review," January 2010.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-15% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, Case No. 40755, SDG No. MH35G5, consisted of twenty sediment / mine sediment / soil -surface samples for metals by ICP-AES and ICP-MS (ISM01.2). The following table lists the data qualifiers added to the sample analyses. Please see Data Qualifier Definitions, attached to the end of this report.

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
MH35G5, MH35G6, MH35G7, MH35G8, MH35G9, MH35H1, MH35H2, MH35H3, MH35H4, MH35H5, MH35H6, MH35H9, MH35J0, MH35J1, MH35J2, MH35J3, MH35J4, MH35J5	Antimony	U	Blank Contamination.	3
MH35G5, MH35G6, MH35G7, MH35G9, MH35H0, MH35H1, MH35H2, MH35H3, MH35H4, MH35H5, MH35H6, MH35H8, MH35H9, MH35J1, MH35J2, MH35J3, MH35J4, MH35J5	Beryllium			
MH35G6, MH35G7, MH35G8, MH35G9, MH35H1, MH35H2, MH35H3, MH35H4, MH35H5, MH35H8, MH35H9, MH35J1, MH35J2, MH35J3, MH35J5	Cadmium			
MH35G5, MH35G7, MH35G9, MH35H2, MH35H4, MH35H5, MH35H6, MH35J1, MH35J2	Calcium			
MH35H9	Chromium			
MH35G7, MH35G9, MH35H0, MH35H8, MH35H9	Cobalt			
MH35G7, MH35G9, MH35H0, MH35H2, MH35H4, MH35H8, MH35H9, MH35J1, MH35J2	Magnesium			
MH35G7, MH35H0, MH35H8 MH35H9	Nickel			

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
MH35G5, MH35G7, MH35G9, MH35H0, MH35H1, MH35H2, MH35H3, MH35H4, MH35H6, MH35H8, MH35H9, MH35J0, MH35J1, MH35J2, MH35J3	Potassium	U	Blank Contamination	3
MH35G5, MH35G6, MH35G7, MH35G8, MH35G9, MH35H0, MH35H1, MH35H2, MH35H3, MH35H4, MH35H5, MH35H6, MH35H8, MH35H9, MH35J0, MH35J1, MH35J2, MH35J3, MH35J4, MH35J5	Selenium			
MH35G7, MH35G8, MH35H1, MH35H8, MH35H9, MH35J2, MH35J3	Silver			
MH35G5, MH35G6, MH35G7, MH35G8, MH35G9, MH35H0, MH35H1, MH35H2, MH35H3, MH35H4, MH35H5, MH35H6, MH35H8, MH35H9, MH35J0, MH35J1, MH35J2, MH35J3, MH35J4, MH35J5	Sodium			
MH35G5, MH35G7, MH35G8, MH35G9, MH35H0, MH35H2, MH35H3, MH35H4, MH35H6, MH35H8, MH35H9, MH35J0, MH35J1, MH35J2, MH35J3, MH35J4, MH35J5	Thallium			
MH35G8, MH35J0	Beryllium	J+	Potentially false positive detection in ICS check sample	4
MH35G6, MH35G8, MH35H5, MH35J4, MH35J5	Potassium			
All Samples	Thallium	UJ	Potentially false negative detection in ICS check sample	
	Selenium, Zinc	J- / UJ	MS 30 - 74%R, Post Digestion Spike %R < 75%	7
	Antimony, Silver	J / UJ	MS <30%R, Post Digestion Spike %R ≥ 75%	
	Arsenic, Beryllium, Cadmium, Chromium, Copper, Manganese, Nickel, Zinc	J	Serial Dilution %D > 10%	8

## 1. PRESERVATION AND HOLDING TIMES

All technical holding times and preservation criteria were met.

Yes         No  X 

Comments: The samples were analyzed within 180 days for the ICP metals. According to the Sample Log-In Sheet and case narrative, the two sample coolers were each received at a temperature of 7°C, which is outside the recommended temperature range of 4 ± 2°C. The Sample Log-In Sheet further indicates that neither cooler contained a Cooler Temperature Indicator Bottle, as indicated on the form to be required. There is also no indication that SMO was contacted regarding this issue, neither is any documentation of the resolution or indication of how the cooler temperature was derived provided.

When the sample preservation criteria are not met, but the sample analysis and extraction are within the technical holding times then professional judgment is used whether to qualify the data. No action was taken since the preservation exceedence was minimal and the extraction and holding times were well within the established parameters.

No other shipping or receiving problems were noted. Chain-of-custody, summary forms, and raw data were evaluated.

## 2. INSTRUMENT CALIBRATIONS: INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV AND CCV)

The initial and continuing calibration verification standards (ICV and CCV, respectively) met SOW requirements.

Yes  X       No   

Comments: None.

The calibration verification results were within 90-110% recovery for metals, 85-115% for cyanide, and 80-120% for mercury.

Yes  X       No   

Comments: None.

The continuing calibration standards were run at 10% frequency or every two hours.

Yes  X       No   

Comments: None.

### 3. BLANKS

The initial and continuing calibration blanks (ICB and CCB, respectively) met SOW requirements.

Yes X      No \_\_\_\_\_

Comments: For the ICP-AES analyses, the ICB was rerun.

The continuing calibration blanks were run at 10% frequency.

Yes X      No \_\_\_\_\_

Comments: Continuing calibration blanks were run every 10 samples.

A laboratory/preparation blank was run at the frequency of one per twenty samples, or per sample delivery group (whichever is more frequent), and for each matrix analyzed.

Yes X      No \_\_\_\_\_

Comments: None.

All analyzed blanks were free of contamination.

Yes \_\_\_\_\_ No X

Comments: The following table lists the blanks with contamination that resulted in sample qualification, elements present, affected samples, and data qualifiers:

## Blank Contaminants

Blank ID	Contam-inant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/ Adjustment
PB	Antimony	1	0.0097	0.017	MH35G5 MH35G6 MH35G7 MH35G8 MH35G9 MH35H1 MH35H2 MH35H3 MH35H4 MH35H5 MH35H6 MH35H9 MH35J0 MH35J1 MH35J2 MH35J3 MH35J4 MH35J5	0.44 0.82 1.1 0.14 1.8 0.46 0.65 0.20 0.74 0.47 1.6 1.2 0.29 1.0 1.7 0.51 0.94 0.14	1.3 U 1.6 U 2.8 U 1.3 U 3.0 U 3.2 U 2.7 U 1.3 U 2.8 U 2.2 U 2.7 U 2.9 U 1.7 U 3.0 U 3.1 U 3.5 U 1.3 U 1.2 U
PB	Beryllium	0.5	0.0032	0.013	MH35G5 MH35G6 MH35G7 MH35G9 MH35H0 MH35H1 MH35H2 MH35H3 MH35H4 MH35H5 MH35H6 MH35H8 MH35H9 MH35J1 MH35J2 MH35J3 MH35J4 MH35J5	0.25 0.38 0.13 0.74 0.37 1.1 0.33 0.23 0.41 0.44 0.52 0.26 1.2 0.26 0.13 1.6 0.48 0.44	0.63 U 0.79 U 1.4 U 1.5 U 1.1 U 1.6 U 1.4 U 0.64 U 1.4 U 1.1 U 1.4 U 1.7 U 1.5 U 1.5 U 1.5 U 0.64 U 0.60 U
PB	Cadmium	0.5	0.0027	0.004	MH35G6 MH35G7 MH35G8 MH35G9 MH35H1 MH35H2 MH35H3 MH35H4 MH35H5 MH35H8 MH35H9 MH35J1 MH35J2 MH35J3 MH35J5	0.73 0.11 0.42 1.2 1.1 0.58 0.51 0.50 0.70 0.12 0.74 0.28 1.2 1.1 1.7 U 0.60 U.	0.79 U 1.4 U 0.64 U 1.5 U 1.6 U 1.4 U 0.64 U 1.4 U 1.1 U 1.7 U 1.5 U 1.5 U 1.5 U 1.5 U 1.7 U

Blank ID	Contam-inant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/ Adjustment
PB	Calcium	500	1.7	1.957	MH35G5 MH35G7 MH35G9 MH35H2 MH35H4 MH35H5 MH35H6 MH35J1 MH35J2	195 1110 1390 1330 1110 859 1270 1070 729	627 U 1380 U 1500 U 1370 U 1410 U 1100 U 1370 U 1510 U 1530 U
PB	Chromium	1	0.026	0.060	MH35H9	0.62	2.9 U
PB	Cobalt	1	0.0053	0.500	MH35G7 MH35G9 MH35H0 MH35H8 MH35H9	1.4 2.3 1.1 1.1 0.62	2.8 U 3.0 U 2.2 U 3.4 U 2.9 U
PB	Magnesium	500	1.2	2.721	MH35G7 MH35G9 MH35H0 MH35H2 MH35H4 MH35H8 MH35H9 MH35J1 MH35J2	753 646 791 1150 941 1460 327 1020 1040	1380 U 1500 U 1120 U 1370 U 1410 U 1680 U 1460 U 1510 U 1530 U
PB	Nickel	0.5	0.013	0.500	MH35G7 MH35H0 MH35H8 MH35H9	0.99 1.1 1.1 0.59	1.4 U 1.1 U 1.7 U 1.5 U
PB	Potassium	500	5.8	-8.872	MH35G5 MH35G7 MH35G9 MH35H0 MH35H1 MH35H2 MH35H3 MH35H4 MH35H6 MH35H8 MH35H9 MH35J0 MH35J1 MH35J2 MH35J3	606 498 514 504 817 729 297 730 956 583 268 703 1020 373 974	627 U 1380 U 1500 U 1120 U 1580 U 1370 U 638 U 1410 U 1370 U 1680 U 1460 U 825 U 1510 U 1530 U 1740 U
PB	Selenium	2.5	0.036	2.500	MH35G5 MH35G6 MH35G7 MH35G8 MH35G9 MH35H0 MH35H1 MH35H2 MH35H3 MH35H4 MH35H5 MH35H6	1.5 1.8 0.78 1.0 1.0 0.83 1.3 0.83 0.92 0.69 1.6 1.1	3.1 U 4.0 U 6.9 U 3.2 U 7.5 U 5.6 U 7.9 U 6.9 U 3.2 U 7.1 U 5.5 U 6.9 U

Blank ID	Contaminant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
PB	Selenium	2.5	0.036	2.500	MH35H8 MH35H9 MH35J0 MH35J1 MH35J2 MH35J3 MH35J4 MH35J5	2.4 0.34 0.32 1.5 0.23 1.2 0.85 0.62	8.4 U 7.3 U 4.1 U 7.6 U 7.6 U 8.7 U 3.2 U 3.0 U
PB	Silver	0.5	0.0023	0.015	MH35G7 MH35G8 MH35H1 MH35H8 MH35H9 MH35J2 MH35J3	0.38 0.48 1.4 0.29 0.88 0.84 0.56	1.4 U 0.64 U 1.6 U 1.7 U 1.5 U 1.5 U 1.7 U
PB	Sodium	500	0.73	17.117	MH35G5 MH35G6 MH35G7 MH35G8 MH35G9 MH35H0 MH35H1 MH35H2 MH35H3 MH35H4 MH35H5 MH35H6 MH35H8 MH35H9 MH35J0 MH35J1 MH35J2 MH35J3 MH35J4 MH35J5	26.2 72.1 53.5 72.2 38.4 33.9 44.5 53.0 20.8 73.1 102 78.6 141 28.6 25.2 90.9 30.5 88.4 77.9 81.2	627 U 795 U 1380 U 640 U 1500 U 1120 U 1580 U 1370 U 638 U 1410 U 1100 U 1370 U 1680 U 1460 U 825 U 1510 U 1530 U 1740 U 640 U 605 U
PB	Thallium	0.5	0.0015	0.500	MH35G5 MH35G6 MH35G7 MH35G8 MH35G9 MH35H0 MH35H1 MH35H2 MH35H3 MH35H4 MH35H5 MH35H6 MH35H8 MH35H9 MH35J0 MH35J1 MH35J2 MH35J3 MH35J4 MH35J5	0.45 0.64 0.12 0.31 0.19 0.11 0.77 0.33 0.23 0.33 0.61 0.41 0.070 0.017 0.39 0.31 0.25 0.50 0.31 0.33	0.63 U 0.79 U 1.4 U 0.64 U 1.5 U 1.1 U 1.6 U 1.4 U 0.64 U 1.4 U 1.1 U 1.4 U 1.7 U 1.5 U 0.83 U 1.5 U 1.5 U 1.7 U 0.64 U 0.60 U

#### 4. INDUCTIVELY COUPLED PLASMA - INTERFERENCE CHECK SAMPLE (ICP-ICS)

The ICP interference check sample (ICS) was run at the beginning and end of each sample analysis run and every 20 analytical samples, but not prior to the ICV.

Yes X      No \_\_\_\_\_

Comments:      None.

Percent recovery of the analytes in the ICS solutions were within the range of 80-120% or the result was within  $\pm$  the CRQL.

Yes \_\_\_\_\_      No X

Comments:      For Sodium, the ICP-AES Interference Check Sample Results exceeded the True Values by approximately 2.0 times the CRQL, this analysis was repeated with similar results. Results for all samples for Sodium analyses, have already been flagged 'U' due to blank contamination therefore no further qualification is applied due to the ICP-AES ICS result.

Sample results for aluminum, calcium, iron, and magnesium were less than the ICSA values or no interference was noted.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

Sample results contain potential false positives and false negatives.

Yes X      No \_\_\_\_\_

Comments:      The following table lists the elements with potential false positives or false negatives that resulted in sample qualification, affected samples, and data qualifiers:

**ICP Interferences**

Element	Concentration Found in ICSA Sample (ug/L)	Affected Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
Beryllium	0.36	MH35G8 MH35J0	>MDL	J+
Potassium	494	MH35G6 MH35G8 MH35H5 MH35J4 MH35J5		
Thallium	-0.05	All samples	All concentrations	UJ

**5. LABORATORY CONTROL SAMPLE**

The laboratory control sample (LCS) was prepared and analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_

Comments:      None.

All results were within control limits OF 70-130%.

Yes X      No \_\_\_\_\_

Comments:      None.

**6. FORM 6 & 12 - DUPLICATE SAMPLE ANALYSIS**

Duplicate sample analysis was performed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

The RPDs were calculated correctly.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

For sample concentrations greater than five times the CRQL, RPDs were within 20% (limits of 35% apply for soil/sediments/tailings samples).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

For sample concentrations less than five times the CRQL, duplicate analysis results were within the control window of CRQL (absolute difference < CRQL for soils).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

## 7. SPIKE SAMPLE ANALYSIS

A matrix spike sample was analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

The percent recoveries (%Rs) were calculated correctly.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

Spike recoveries were within the range of 75-125% (an exception is granted where the sample concentration is four times the spike concentration).

Yes \_\_\_\_\_      No X

Comments:      The following table lists the spike recoveries outside control limits, post digestion spike recoveries, samples affected, and data qualifiers:

Element	Matrix Spike %R	Post-Digestion %R	Samples Affected	Qualifiers
Antimony	12%	84%	All samples	J/UJ
Selenium	60%	63%		J-/UJ
Silver	6%	85%		J/UJ
Zinc	40%	68%		J-/UJ

A post-digest spike was performed for those elements that did not meet the specified criteria (i.e., Pre-digestion/pre-distillation spike recovery falls outside of control limits and sample result is less than four times the spike amount added, exception: Ag, Hg).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

#### **8. ICP SERIAL DILUTION**

A serial dilution was performed for ICP analysis with every twenty or fewer samples of a similar matrix, or one per sample delivery group, whichever is more frequent.

Yes X      No \_\_\_\_\_

Comments:      None.

The serial dilution was without interference problems as defined by the SOW.

Yes \_\_\_\_\_      No X

Comments:      The following serial dilution %Ds were greater than 10% and the original sample result was at least 50\* the MDL:

Element	% Difference	Samples Affected	Qualifiers
Arsenic	22%		
Beryllium	28%		
Cadmium	13%		
Chromium	12%		
Copper	21%		
Manganese	12%		
Nickel	90%		
Zinc	34%		

**9. ICP-MS**

The ICP MS tune met SOW requirements.

Yes X      No \_\_\_\_\_

Comments: The ICP MS instrument was correctly tuned prior to analysis and all tuning criteria were met.

The minimum number of internal standards were added to the analyses and bracketed the target analyte masses.

Yes X      No \_\_\_\_\_

Comments: None.

All percent relative intensities were within 60-125%.

Yes X      No \_\_\_\_\_

Comments: None.

**10. REGIONAL QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)**

Regional QA/QC was conducted as initiated by the EPA Region 8.

Yes \_\_\_\_\_ No \_\_\_\_\_ NA X

Comments: The SDG shows no indication of EPA Region 8 initiating any additional QA/QC.

**11. FORM 10 - INTERELEMENT CORRECTION FACTORS FOR ICP**

Interelement corrections for ICP were reported.

Yes X      No \_\_\_\_\_

Comments: None.

**12. FORM 12 - PREPARATION LOG**

Information on the preparation of samples for analysis was reported on Form 12.

Yes X      No \_\_\_\_\_

Comments: None.

**13. FORM 13 - ANALYSIS RUN LOG**

A Form 13 with the required information was filled out for each analysis run in the data package.

Yes X      No \_\_\_\_\_

Comments:      None.

**14. Additional Comments or Problems/Resolutions Not Addressed Above**

Page 1 of the Evidence Audit Checklist (EAC) indicates three airbills are associated with this SDG, however documentation is only provided for Airbill Number 3430, which documents the shipment of four packages. The laboratory only documented receipt of two coolers, so it is unclear as to what the other two packages were that were included on the airbill.

**INORGANIC DATA QUALITY ASSURANCE REVIEW****Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality. Use of additional qualifiers should be carefully considered. Definitions for all qualifiers used should be provided with each report.

**GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA**

- R - Reported value is "rejected." The data are unusable. Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity and is the approximate concentration of the analyte in the sample.
- J+ - The associated numerical value is an estimated quantity but the result may be biased high.
- J- - The associated numerical value is an estimated quantity but the result may be biased low.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound may or may not be present in the sample.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.)  
ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

## ACRONYMS

AA	Atomic Absorption
Ag	Silver
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CRA	CRQL standard required for AA
CRQL	Contract Required Quantitation Limit
CRI	CRQL standard required for ICP
CV	Cold Vapor
EPA	U.S. Environmental Protection Agency
GFAA	Graphite Furnace Atomic Absorption
Hg	Mercury
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICSA	Interference Check Sample (Solution A)
ICSAB	Interference Check Sample (Solution AB)
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LRA	Linear Range Verification Analysis
MDL	Method Detection Limit
PDS	Post Digestion Spike
QC	Quality Control
RPD	Relative Percent Difference
RPM	Regional Project Manager
RSD	Percent Relative Standard Deviation
SA	Spike Added
SAS	Special Analytical Services
SDG	Sample Delivery Group
SOW	Statement of Work
SR	Sample Result
SSR	Spiked Sample Result

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G5

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA Case No.: 40755

Mod. Ref. No.:                    SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769001

% Solids: 79.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.44	J	N	MS
7440-38-2	Arsenic	58.9		E	MS
7440-39-3	Barium	144.			MS
7440-41-7	Beryllium	0.25	J	E	MS
7440-43-9	Cadmium	0.77		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.8		E	MS
7440-48-4	Cobalt	4.0			MS
7440-50-8	Copper	64.9		E	MS
7439-89-6	Iron				
7439-92-1	Lead	254.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	406.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.9		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.5	J	N	MS
7440-22-4	Silver	0.95		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.45	J		MS
7440-62-2	Vanadium	36.5			MS
7440-66-6	Zinc	192.		NE	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: Texture: COARSE

## Clarity Before:

Texture: COARSE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Clarity After: CLEAR

#### **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G5

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769001

% Solids: 79.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3730			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	195.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	53500			P
7439-92-1	Lead				
7439-95-4	Magnesium	2030			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	606.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	26.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

6270<sup>m</sup>

627 v<sup>n</sup>

6270 <sup>W</sup>  
2/18/44

Color Before: ORANGE Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G6

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769002  
 % Solids: 62.9 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.82	J	N	MS
7440-38-2	Arsenic	44.2		E	MS
7440-39-3	Barium	443.			MS
7440-41-7	Beryllium	0.38	J	E	MS
7440-43-9	Cadmium	0.73	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.6		E	MS
7440-48-4	Cobalt	3.5			MS
7440-50-8	Copper	35.8		E	MS
7439-89-6	Iron				
7439-92-1	Lead	372.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	344.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.7		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.8	J	N	MS
7440-22-4	Silver	2.2		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.64	J		MS
7440-62-2	Vanadium	37.2			MS
7440-66-6	Zinc	179.		NE	MS
57-12-5	Cyanide				

1.6 UJ N  
J N  
0.79 UJ N  
0.79 UJ N  
J N  
J N  
J N  
J N  
4.0 UJ N  
J N  
0.79 UJ N  
J N  
2/18/14

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G6

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769002  
 % Solids: 62.9 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4750			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	854.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	73000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	1890			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1150			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	72.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + M  
7950 7/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769005  
 % Solids: 36.2 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.1	J	N	MS
7440-38-2	Arsenic	36.7		E	MS
7440-39-3	Barium	30.7			MS
7440-41-7	Beryllium	0.13	J	E	MS
7440-43-9	Cadmium	0.11	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	5.1		E	MS
7440-48-4	Cobalt	1.4	J		MS
7440-50-8	Copper	113.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	136.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	156.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.99	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.78	J	N	MS
7440-22-4	Silver	0.38	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.12	J		MS
7440-62-2	Vanadium	27.8			MS
7440-66-6	Zinc	44.1		NE	MS
57-12-5	Cyanide				

2.80J *m*  
 J *n*  
 1.40J *n*  
 1.40J *n*  
 J *n*  
 2.80 *n*  
 J *n*  
 J *n*  
 1.40J *n*  
 6.90J *n*  
 1.40J *n*  
 1.40J *n*  
 J- *n*  
 2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769005  
 % Solids: 36.2 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2020			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1110			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	397000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	753.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	498.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	53.5	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1380 U <sup>74</sup>

1380 U <sup>74</sup>

1380 U <sup>74</sup>

1380 U <sup>74</sup>

2/18/14

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G8

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769006  
 % Solids: 78.1 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.14	J	N	MS
7440-38-2	Arsenic	11.6		E	MS
7440-39-3	Barium	78.8			MS
7440-41-7	Beryllium	0.66		E	MS
7440-43-9	Cadmium	0.42	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.2		E	MS
7440-48-4	Cobalt	6.5			MS
7440-50-8	Copper	65.0		E	MS
7439-89-6	Iron				
7439-92-1	Lead	145.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	839.		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.2		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.0	J	N	MS
7440-22-4	Silver	0.48	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.31	J		MS
7440-62-2	Vanadium	52.2			MS
7440-66-6	Zinc	145.		NE	MS
57-12-5	Cyanide				

1,30J ✓  
J ✓  
J+ ✓  
0.64UJ ✓  
J ✓  
J ✓  
J ✓  
J ✓  
J ✓  
J ✓  
J ✓  
3,2UJ ✓  
0.64UJ ✓  
0.64UJ ✓  
J- ✓  
2/18/11

Color Before: ORANGE Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G8

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769006  
% Solids: 78.1 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

J +  $\pi$   
6400  $\pi$   
2/18/14

Color Before: ORANGE Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G9

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769007  
 % Solids: 33.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.8	J	N	MS
7440-38-2	Arsenic	24.5		E	MS
7440-39-3	Barium	36.1			MS
7440-41-7	Beryllium	0.74	J	E	MS
7440-43-9	Cadmium	1.2	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.1		E	MS
7440-48-4	Cobalt	2.3			MS
7440-50-8	Copper	147.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	773.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	489.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.0		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.0	J	N	MS
7440-22-4	Silver	8.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.19	J		MS
7440-62-2	Vanadium	34.0			MS
7440-66-6	Zinc	465.		NE	MS
57-12-5	Cyanide				

3.0 UJ M  
J M  
1.5 UJ M  
1.5 UJ M  
J M  
3.0 U J M  
J M  
J M  
J M  
7.5 UJ M  
J M  
1.5 UJ M  
J M  
2/18/14

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G9

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769007  
% Solids: 33.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3850			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1390			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	218000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	646.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	514.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	38.4	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

Color Before: RED Clarity Before: . . . Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H0

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769008  
 % Solids: 44.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	2.3		N	MS
7440-38-2	Arsenic	23.2		E	MS
7440-39-3	Barium	46.5			MS
7440-41-7	Beryllium	0.37	J	E	MS
7440-43-9	Cadmium	2.4		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.0		E	MS
7440-48-4	Cobalt	1.1	J		MS
7440-50-8	Copper	112.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	457.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	239.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.1		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.83	J	N	MS
7440-22-4	Silver	3.9		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.11	J		MS
7440-62-2	Vanadium	31.7			MS
7440-66-6	Zinc	1040		DNE	MS
57-12-5	Cyanide				

J *m*  
 J *n*  
*1,1 UJ* *m*  
 J *n*  
*2,2 U* *n*  
 J *n*  
*5,6 UJ* *m*  
 J *n*  
*1,1 UJ* *n*  
 J- *n*  
*2/18/11*

Color Before: RED Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35HO

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769008

% Solids: 44.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

1120 v m

11200  $\pi$

11200<sup>n</sup>

**Color Before:** RED      **Clarity Before:**      **Texture:** MEDIUM

Clarity Before: **Texture: MEDIUM**

Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Clarity After: CLEAR Artifacts:

#### **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H1

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769009  
% Solids: 31.6 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.46	J	N	MS
7440-38-2	Arsenic	57.5		E	MS
7440-39-3	Barium	200.			MS
7440-41-7	Beryllium	1.1	J	E	MS
7440-43-9	Cadmium	1.1	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	11.9		E	MS
7440-48-4	Cobalt	23.7			MS
7440-50-8	Copper	250.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	1460		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	2360		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	12.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.3	J	N	MS
7440-22-4	Silver	1.4	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.77	J		MS
7440-62-2	Vanadium	62.0			MS
7440-66-6	Zinc	378.		NE	MS
57-12-5	Cyanide				

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35H1

Lab Name: ALS Laboratory Group Contract: EPW09036

Contract: EPW09036

Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: SDG No.: MH35G5

Mod. Ref. No.: SDG No.: MH35G5

Matrix: Soil Lab Sample ID: 1030769009

Lab Sample ID: 1030769009

% Solids: 31.6 Date Received: 11/03/2010

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8140			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1940			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	65400			P
7439-92-1	Lead				
7439-95-4	Magnesium	2260			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	817.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	44.5	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1580 u <sup>m</sup>

Color Before: BROWN Clarity Before: Texture: MEDIUM

Clarity Before: **Texture: MEDIUM**

Color After: YELLOW Clarity After: CLEAR Artifacts:

Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H2

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769010

% Solids: 36.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.65	J	N	MS
7440-38-2	Arsenic	15.2		E	MS
7440-39-3	Barium	71.6			MS
7440-41-7	Beryllium	0.33	J	E	MS
7440-43-9	Cadmium	0.58	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.4		E	MS
7440-48-4	Cobalt	6.8			MS
7440-50-8	Copper	124.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	341.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	2010		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.2		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.83	J	N	MS
7440-22-4	Silver	4.0		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.33	J		MS
7440-62-2	Vanadium	27.3			MS
7440-66-6	Zinc	242.		NE	MS
57-12-5	Cyanide				

2.7 UJ n  
J n  
1.4 UJ n  
1.4 UJ n  
J n  
J n  
J H --  
J K  
6.9 UJ n  
J n  
1.4 UJ n  
J - n  
2/18/11

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35H2

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769010  
% Solids: 36.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4940			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1330			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	159000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	1150			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	729.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	53.0	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1370 U <sup>m</sup>

1370.0

13700 <sup>m</sup>

1370 v <sup>m</sup>

Color Before: BROWN Clarity Before: Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H3

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769011  
 % Solids: 78.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.20	J	N	MS
7440-38-2	Arsenic	26.2		E	MS
7440-39-3	Barium	51.8			MS
7440-41-7	Beryllium	0.23	J	E	MS
7440-43-9	Cadmium	0.51	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	9.1		E	MS
7440-48-4	Cobalt	4.3			MS
7440-50-8	Copper	42.8		E	MS
7439-89-6	Iron				
7439-92-1	Lead	294.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	624.		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.1		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.92	J	N	MS
7440-22-4	Silver	0.88		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.23	J		MS
7440-62-2	Vanadium	29.1			MS
7440-66-6	Zinc	145.		NE	MS
57-12-5	Cyanide				

1.3 UJ N  
J N  
0.64 UJ N  
0.64 UJ N  
J N  
J N  
J N  
J N  
J N  
3.2 UJ N  
J N  
0.64 UJ N  
J N  
2/18/11

Color Before: YELLOW Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H3

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769011  
% Solids: 78.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9330			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1710			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	18200			P
7439-92-1	Lead				
7439-95-4	Magnesium	8680			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	297.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	20.8	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

638 u  $\mu$   
638 u  $\mu$   
2/18/u

Color Before: ORANGE Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769012  
 % Solids: 35.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.74	J	N	MS
7440-38-2	Arsenic	20.5		E	MS
7440-39-3	Barium	61.9			MS
7440-41-7	Beryllium	0.41	J	E	MS
7440-43-9	Cadmium	0.50	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.3		E	MS
7440-48-4	Cobalt	6.0			MS
7440-50-8	Copper	84.0		E	MS
7439-89-6	Iron				
7439-92-1	Lead	362.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1910		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.6		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.69	J	N	MS
7440-22-4	Silver	2.3		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.33	J		MS
7440-62-2	Vanadium	29.7			MS
7440-66-6	Zinc	240.		NE	MS
57-12-5	Cyanide				

2.80J<sup>m</sup>  
J N  
1.40J H  
1.40J H  
J N  
J N  
J N  
J H  
J N  
7.10J N  
J N  
1.40J H  
J- m  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769012  
 % Solids: 35.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4520			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1110			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	203000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	941.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	730.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	73.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1410 U  $\pi$

1410 U  $\pi$

1410 U  $\pi$

1410 U  $\pi$   
2/18/14

Color Before: RED Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H5

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769013  
 % Solids: 45.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.47	J	N	MS
7440-38-2	Arsenic	20.3		E	MS
7440-39-3	Barium	142.			MS
7440-41-7	Beryllium	0.44	J	E	MS
7440-43-9	Cadmium	0.70	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.4		E	MS
7440-48-4	Cobalt	3.2			MS
7440-50-8	Copper	80.7		E	MS
7439-89-6	Iron				
7439-92-1	Lead	875.		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	659.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.9		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.6	J	N	MS
7440-22-4	Silver	2.3		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.61	J		MS
7440-62-2	Vanadium	62.0			MS
7440-66-6	Zinc	206.		NE	MS
57-12-5	Cyanide				

2.2 UJ N  
J N  
1.1 UJ N  
1.1 UJ N  
J N  
J N  
J N  
J N  
J N  
5.5 UJ N  
J N  
1.1 UJ N  
J N  
2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H5

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769013  
% Solids: 45.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6730			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	859.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	144000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	2820			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1250			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	102.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: . Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H6

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.:  SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769014  
 % Solids: 36.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.6	J	N	MS
7440-38-2	Arsenic	35.6		E	MS
7440-39-3	Barium	85.9			MS
7440-41-7	Beryllium	0.52	J	E	MS
7440-43-9	Cadmium	2.7		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.0		E	MS
7440-48-4	Cobalt	4.7			MS
7440-50-8	Copper	212.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	2050		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1300		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.5		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.1	J	N	MS
7440-22-4	Silver	5.0		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.41	J		MS
7440-62-2	Vanadium	37.2			MS
7440-66-6	Zinc	628.		NE	MS
57-12-5	Cyanide				

2.7 UJ n  
J n  
1.4 UJ n  
J n  
J n  
J n  
J n  
J n  
6.9 UJ n  
J n  
1.4 UJ n  
J n  
2/18/k

Color Before: ORANGE Clarity Before:  Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H6

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
Matrix: Soil Lab Sample ID: 1030769014  
% Solids: 36.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5750			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1270			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	266000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	2370			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	956.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	78.6	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1370 U<sup>m</sup>

1370 v

1370 u <sup>n</sup>  
2/18/11

**Color Before:** ORANGE      **Clarity Before:**      **Texture:** MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H8

Lab Name: ALS Laboratory Group Contract: EPW09036

Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5

Matrix: Soil Lab Sample ID: 1030769015

% Solids: 29.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	5.6		N	MS
7440-38-2	Arsenic	126.		E	MS
7440-39-3	Barium	21.4			MS
7440-41-7	Beryllium	0.26	J	E	MS
7440-43-9	Cadmium	0.12	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.4		E	MS
7440-48-4	Cobalt	1.1	J		MS
7440-50-8	Copper	369.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	59.4			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	130.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.1	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.4	J	N	MS
7440-22-4	Silver	0.29	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.070	J		MS
7440-62-2	Vanadium	88.0			MS
7440-66-6	Zinc	63.3		NE	MS
57-12-5	Cyanide				

J M  
 J N  
 1.7 UJ N  
 1.7 UJ N  
 J N  
 3.4 U N  
 J N  
 J N  
 1.7 UJ N  
 8.4 UJ N  
 1.7 UJ N  
 1.7 UJ N  
 J- N  
 2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H8

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.:  SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769015  
 % Solids: 29.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4960			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1820			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	519000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	1460			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	583.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	141.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1680 U <sup>M</sup>

1680 U <sup>H</sup>

1680 U <sup>M</sup>  
2/18/H

Color Before: ORANGE Clarity Before:  Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H9

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769016  
 % Solids: 34.2 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.2	J	N	MS
7440-38-2	Arsenic	43.9		E	MS
7440-39-3	Barium	3.5	J		MS
7440-41-7	Beryllium	1.2	J	E	MS
7440-43-9	Cadmium	0.74	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	0.62	J	E	MS
7440-48-4	Cobalt	0.62	J		MS
7440-50-8	Copper	11.0		E	MS
7439-89-6	Iron				
7439-92-1	Lead	1740		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	107.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.59	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.34	J	N	MS
7440-22-4	Silver	0.88	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.017	J		MS
7440-62-2	Vanadium	12.4			MS
7440-66-6	Zinc	361.		NE	MS
57-12-5	Cyanide				

Color Before: RED Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H9

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769016  
 % Solids: 34.2 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3170			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1490			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	445000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	327.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	268.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	28.6	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1460 U *m*  
1460 U *m*  
1460 U *m*  
1460 U *m*  
218/u

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J0

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769017  
 % Solids: 60.6 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.29	J	N	MS
7440-38-2	Arsenic	33.3		E	MS
7440-39-3	Barium	92.7			MS
7440-41-7	Beryllium	1.1		E	MS
7440-43-9	Cadmium	1.3		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.6		E	MS
7440-48-4	Cobalt	16.5			MS
7440-50-8	Copper	209.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	711.		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	4130		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	8.0		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.32	J	N	MS
7440-22-4	Silver	2.1		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.39	J		MS
7440-62-2	Vanadium	64.1			MS
7440-66-6	Zinc	289.		NE	MS
57-12-5	Cyanide				

1.7 U J *n*  
 J *n*  
 J + *n*  
 J *n*  
 4.1 U J *n*  
 J *n*  
 0.83 U J *n*  
 J - *n*  
 2/18/*n*

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J0

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35G5

**Matrix:** Soil

Lab Sample ID: 1030769017

% Solids: 60.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13700			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1660			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	37300			P
7439-92-1	Lead				
7439-95-4	Magnesium	8730			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	703.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	25.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

825 v 7

825 U <sup>7</sup>  
2/18/u

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769018

% Solids: 33.1

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.0	J	N	MS
7440-38-2	Arsenic	49.8		E	MS
7440-39-3	Barium	75.6			MS
7440-41-7	Beryllium	0.26	J	E	MS
7440-43-9	Cadmium	0.28	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.1		E	MS
7440-48-4	Cobalt	3.9			MS
7440-50-8	Copper	96.7		E	MS
7439-89-6	Iron				
7439-92-1	Lead	421.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	618.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.6		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.5	J	N	MS
7440-22-4	Silver	2.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.31	J		MS
7440-62-2	Vanadium	43.1			MS
7440-66-6	Zinc	98.1		NE	MS
57-12-5	Cyanide				

3.0 UJ ✓  
J ✓  
1.5 UJ ✓  
1.5 UJ ✓  
J ✓  
J ✓  
J ✓  
J ✓  
7.6 UJ ✓  
J ✓  
1.5 UJ ✓  
J ✓  
2/18/u

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35J1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769018

% Solids: 33.1

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3240			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1070	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	300000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	1210	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1020	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	90.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1510 U <sup>2</sup>

1510 U <sup>7</sup>

1510 U <sup>n</sup>

1510 v.

Color Before: ORANGE Clarity Before: Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J2

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769019  
 % Solids: 32.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.7	J	N	MS
7440-38-2	Arsenic	49.1		E	MS
7440-39-3	Barium	41.3			MS
7440-41-7	Beryllium	0.13	J	E	MS
7440-43-9	Cadmium	1.0	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	2.2	J	E	MS
7440-48-4	Cobalt	16.6			MS
7440-50-8	Copper	32.8		E	MS
7439-89-6	Iron				
7439-92-1	Lead	419.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	2110		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.7		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.23	J	N	MS
7440-22-4	Silver	0.84	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.25	J		MS
7440-62-2	Vanadium	12.0			MS
7440-66-6	Zinc	232.		NE	MS
57-12-5	Cyanide				

3,1 UJ ✓  
J ✓  
1.5 UJ ✓  
1.5 UJ ✓  
J ✓  
J ✓  
J ✓  
J ✓  
J ✓  
1.6 UJ ✓  
1.5 UJ ✓  
1.5 UJ ✓  
J ✓  
2/18/n

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35J2

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35G5

**Matrix:** Soil

Lab Sample ID: 1030769019

% Solids: 32.7

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2320			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	729.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	462000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	1040	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	373.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	30.5	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1530 U <sup>7K</sup>

1530 U.

1530 U  $\pi$

1530 U

Color Before: ORANGE Clarity Before: . Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J3

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5

Matrix: Soil

Lab Sample ID: 1030769020

% Solids: 28.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q.	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.51	J	N	MS
7440-38-2	Arsenic	26.7		E	MS
7440-39-3	Barium	159.			MS
7440-41-7	Beryllium	1.6	J	E	MS
7440-43-9	Cadmium	1.0	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	5.1		E	MS
7440-48-4	Cobalt	18.6			MS
7440-50-8	Copper	216.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	210.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	897.		E	MS
7439-97-6	Mercury				
7440-02-0	Nickel	6.0		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.2	J	N	MS
7440-22-4	Silver	0.56	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.50	J		MS
7440-62-2	Vanadium	31.3			MS
7440-66-6	Zinc	339.		NE	MS
57-12-5	Cyanide				

3.5 U J H  
J H  
1.7 U J H  
1.7 U J H  
J H  
J H  
I H  
J H  
8.7 U J H  
1.7 U J H  
1.7 U J H  
J- H  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J3

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769020  
 % Solids: 28.6 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	28200			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1950			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	62200			P
7439-92-1	Lead				
7439-95-4	Magnesium	2280			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	974.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	88.4	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1740 U *JK*

1740 U *K*  
2/18/m

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769021  
 % Solids: 78.1 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.94	J	N	MS
7440-38-2	Arsenic	23.7		E	MS
7440-39-3	Barium	117.			MS
7440-41-7	Beryllium	0.48	J	E	MS
7440-43-9	Cadmium	9.6		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.4		E	MS
7440-48-4	Cobalt	8.0			MS
7440-50-8	Copper	244.		E	MS
7439-89-6	Iron				
7439-92-1	Lead	1820		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1180		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.8		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.85	J	N	MS
7440-22-4	Silver	5.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.31	J		MS
7440-62-2	Vanadium	53.6			MS
7440-66-6	Zinc	2610		DNE	MS
57-12-5	Cyanide				

Color Before: YELLOW Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769021  
 % Solids: 78.1 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13900			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	5910			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	47800			P
7439-92-1	Lead				
7439-95-4	Magnesium	11200			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1070			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	77.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ M  
640 U M  
2/18/M

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J5

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5  
 Matrix: Soil Lab Sample ID: 1030769022  
 % Solids: 82.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.14	J	N	MS
7440-38-2	Arsenic	13.5		E	MS
7440-39-3	Barium	113.			MS
7440-41-7	Beryllium	0.44	J	E	MS
7440-43-9	Cadmium	0.11	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	10.		E	MS
7440-48-4	Cobalt	6.8			MS
7440-50-8	Copper	40.6		E	MS
7439-89-6	Iron				
7439-92-1	Lead	241.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	796.		DE	MS
7439-97-6	Mercury				
7440-02-0	Nickel	6.6		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.62	J	N	MS
7440-22-4	Silver	1.3		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.33	J		MS
7440-62-2	Vanadium	65.3			MS
7440-66-6	Zinc	102.		NE	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: WHITE Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J5

Lab Name: ALS Laboratory Group Contract: EPW09036

Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35G5

Matrix: Soil Lab Sample ID: 1030769022

% Solids: 82.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12900			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2080			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	36900			P
7439-92-1	Lead				
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1030			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	81.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ R

605 U R  
2/18/14

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

**REGION VIII**  
**DATA VALIDATION REPORT**  
**INORGANIC**

Case/TDD No.	Site Name	Operable Unit	
40755 / 1008-16	Upper Animas Mining District		
RPM/OSC Name			
Sabrina Forrest			
Contractor Laboratory	Contract No.	SDG No.	Laboratory DPO/Region
ALS Laboratory Group	EPW05026	MH36L0	

Review Assigned Date: December 15, 2010 Data Validator: Fred Luck  
Review Completion Date: February 18, 2011 Report Reviewer: Lesley Boyd

Sample ID	Matrix	Analysis
MH36L0	Sediment	CLP –Metals
MH36L1		
MH36L2		
MH36L3		
MH36L4		
MH36L5	Mine Sediment	
MH36L6	Sediment	
MH36L7		
MH36L8		
MH36L9		

## DATA QUALITY STATEMENT

- ( ) Data are ACCEPTABLE according to EPA Functional guidelines with no qualifiers (flags) added by the reviewer.  
( ) Data are UNACCEPTABLE according to EPA Functional Guidelines.  
(X) Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X \_\_\_\_\_

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X \_\_\_\_\_ If yes, list the items that require attention:

**INORGANIC DATA VALIDATION REPORT****REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review," January 2010.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-15% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, Case No. 40755, SDG No. MH36L0, consisted of ten sediment / mine sediment samples for metals by ICP-AES and ICP-MS (ISM01.2). The following table lists the data qualifiers added to the sample analyses. Please see Data Qualifier Definitions, attached to the end of this report.

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
MH36L0, MH36L1, MH36L2, MH36L3, MH36L4, MH36L5, MH36L7, MH36L8, MH36L9	Antimony	U	Blank Contamination	3
MH36L9	Barium			
MH36L0, MH36L2, MH36L4, MH36L5, MH36L6, MH36L7, MH36L8, MH36L9	Beryllium			
MH36L0, MH36L5, MH36L8, MH36L9	Cadmium			
MH36L2, MH36L4, MH36L5, MH36L9	Calcium			
MH36L5, MH36L9	Chromium			
MH36L5, MH36L9	Cobalt			
MH36L5	Nickel			
MH36L0, MH36L1, MH36L2, MH36L3, MH36L4, MH36L5, MH36L6, MH36L7, MH36L8, MH36L9	Selenium			
MH36L5, MH36L9	Silver			
MH36L1, MH36L3	Beryllium	J+	Potentially false positive detection in ICS check sample	4
All Samples	Potassium			
MH36L0, MH36L1, MH36L2, MH36L3, MH36L4, MH36L6, MH36L7, MH36L8	Silver			
All Samples	Sodium			
	Thallium			

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
All Samples	Selenium, Thallium	J- /UJ	MS 30 - 74%R, Post Digestion Spike %R < 75%	7
	Antimony, Silver	J/UJ	MS <30%R, Post Digestion Spike %R ≥ 75%	
	Arsenic, Lead, Potassium, Sodium, Zinc	J	Serial Dilution %D > 10%	8

## 1. PRESERVATION AND HOLDING TIMES

All technical holding times and preservation criteria were met.

Yes \_\_\_\_\_ No X

Comments: The samples were analyzed within 180 days for the ICP metals. According to the Sample Log-In Sheet and case narrative, the two sample coolers were each received at a temperature of 7°C, which is outside the recommended temperature range of  $4 \pm 2^\circ\text{C}$ . The Sample Log-In Sheet further indicates that neither cooler contained a Cooler Temperature Indicator Bottle, as indicated on the form to be required. There is also no indication that SMO was contacted regarding this issue, neither is any documentation of the resolution or indication of how the cooler temperature was derived provided. The TR/COC also did not designate a sample for laboratory QC, but the documentation of the resolution of this issue is provided in the SDG.

When the sample preservation criteria are not met, but the sample analysis and extraction are within the technical holding times then professional judgment is used whether to qualify the data. No action was taken since the preservation exceedence was minimal and the extraction and holding times were well within the established parameters.

The field sampler had used CLP IDs in the incorrect format using the letter 'I' in accordance with the reported previous directions from Region 8, the SMO coordinator assigned new sample IDs to the affected samples and the laboratory was to note this issue in the SDG narrative, which is did. There is no apparent indication that the laboratory had any error involving sample confusion.

No other shipping or receiving problems were noted. Chain-of-custody, summary forms, and raw data were evaluated.

## 2. INSTRUMENT CALIBRATIONS: INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV AND CCV)

The initial and continuing calibration verification standards (ICV and CCV, respectively) met SOW requirements.

Yes X No \_\_\_\_\_

Comments: None.

The calibration verification results were within 90-110% recovery for metals, 85-115% for cyanide, and 80-120% for mercury.

Yes X No \_\_\_\_\_

Comments: None.

The continuing calibration standards were run at 10% frequency or every two hours.

Yes X      No \_\_\_\_\_

Comments:      None.

### 3. BLANKS

The initial and continuing calibration blanks (ICB and CCB, respectively) met SOW requirements.

Yes X      No \_\_\_\_\_

Comments:      For the ICP-AES analyses, the ICB was rerun.

The continuing calibration blanks were run at 10% frequency.

Yes X      No \_\_\_\_\_

Comments:      Continuing calibration blanks were run every 10 samples.

A laboratory/preparation blank was run at the frequency of one per twenty samples, or per sample delivery group (whichever is more frequent), and for each matrix analyzed.

Yes X      No \_\_\_\_\_

Comments:      None.

All analyzed blanks were free of contamination.

Yes \_\_\_\_\_      No X

Comments: The following table lists the blanks with contamination that resulted in sample qualification, elements present, affected samples, and data qualifiers:

## Blank Contaminants

Blank ID	Contam-inant	CRQL	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier Adjustment
PB	Antimony	1	0.0097	0.030	MH36L0 MH36L1 MH36L2 MH36L3 MH36L4 MH36L5 MH36L7 MH36L8 MH36L9	0.53 0.45 0.86 0.45 1.7 0.31 0.45 0.19 0.44	1.3 U 1.3 U 1.6 U 1.4 U 2.0 U 3.2 U 1.3 U 1.3 U 5.0 U
PB	Barium	5	0.044	5.0	MH36L9	21.4	24.9 U
PB	Beryllium	0.5	0.0032	0.011	MH36L0 MH36L2 MH36L4 MH36L5 MH36L6 MH36L7 MH36L8 MH36L9	0.38 0.30 0.34 0.79 0.46 0.45 0.53 1.4	0.63 U 0.80 U 1.0 U 1.6 U 0.95 U 0.65 U 0.63 U 2.5 U
PB	Cadmium	0.5	0.0027	0.50	MH36L0 MH36L5 MH36L8 MH36L9	0.73 0.11 0.42 1.2	0.63 U 1.6 U 0.63 U 2.5 U
PB	Calcium	500	1.7	2.587	MH36L2 MH36L4 MH36L5 MH36L9	592 851 1540 2310	804 U 1030 U 1580 U 2490 U
PB	Chromium	1	0.026	1.00	MH36L5 MH36L9	2.6 2.8	3.2 U 5.0 U
PB	Cobalt	1	0.0053	0.024	MH36L5 MH36L9	1.5 1.5	1.6 U 2.5 U
PB	Nickel	0.5	0.013	0.500	MH36L5	1.2	1.6 U
PB	Selenium	2.5	0.036	2.500	MH36L0 MH36L1 MH36L2 MH36L3 MH36L4 MH36L5 MH36L6 MH36L7 MH36L8 MH36L9	0.55 0.32 0.86 0.70 1.2 0.16 1.4 1.2 0.61 12.4	3.1 U 3.3 U 4.0 U 3.5 U 5.1 U 7.9 U 4.8 U 3.3 U 3.1 U 12.4 U
PB	Silver	0.5	0.0023	0.006	MH36L5 MH36L9	0.31 0.71	1.6 U 2.5 U

#### 4. INDUCTIVELY COUPLED PLASMA - INTERFERENCE CHECK SAMPLE (ICP-ICS)

The ICP interference check sample (ICS) was run at the beginning and end of each sample analysis run and every 20 analytical samples, but not prior to the ICV.

Yes X      No \_\_\_\_\_

Comments:      None.

Percent recovery of the analytes in the ICS solutions were within the range of 80-120% or the result was within  $\pm$  the CRQL.

Yes \_\_\_\_\_ No X

Comments:      For Potassium and Sodium, the ICP-AES Interference Check Sample Results exceeded the True Values by approximately 1.8 to 2.0 times the CRQL, this analysis was repeated with similar results. Results for these analytes that are  $\geq$  MDL have been qualified as estimated high (J+).

Sample results for aluminum, calcium, iron, and magnesium were less than the ICSA values or no interference was noted.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

Sample results contain potential false positives and false negatives.

Yes X      No \_\_\_\_\_

Comments:      The following table lists the elements with potential false positives or false negatives that resulted in sample qualification, affected samples, and data qualifiers:

**ICP Interferences**

Element	Concentration Found in ICSA Sample (ug/L)	Affected Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
Beryllium	0.39	MH36L1 MH36L3	>MDL	J+
Potassium	1020	All samples		
Silver	0.027	MH36L0 MH36L1 MH36L2 MH36L3 MH36L4 MH36L6 MH36L7 MH36L8		
Sodium	975	All samples		
Thallium	0.049	All samples		

**5. LABORATORY CONTROL SAMPLE**

The laboratory control sample (LCS) was prepared and analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_

Comments:      None.

All results were within control limits OF 70-130%.

Yes X      No \_\_\_\_\_

Comments:      None.

**6. FORM 6 & 12 - DUPLICATE SAMPLE ANALYSIS**

Duplicate sample analysis was performed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

The RPDs were calculated correctly.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

For sample concentrations greater than five times the CRQL, RPDs were within 20% (limits of 35% apply for soil/sediments/tailings samples).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

For sample concentrations less than five times the CRQL, duplicate analysis results were within the control window of CRQL (absolute difference < CRQL for soils).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

## 7. SPIKE SAMPLE ANALYSIS

A matrix spike sample was analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

The percent recoveries (%Rs) were calculated correctly.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None

Spike recoveries were within the range of 75-125% (an exception is granted where the sample concentration is four times the spike concentration).

Yes \_\_\_\_\_      No X \_\_\_\_\_

Comments:      The following table lists the spike recoveries outside control limits, post digestion spike recoveries, samples affected, and data qualifiers:

Element	Matrix Spike %R	Post-Digestion %R	Samples Affected	Qualifiers
Antimony	20%	85%	All samples	J/UJ
Selenium	55%	67%		J-/UJ
Silver	-11%	86%		J/UJ
Thallium	74%	69%		J-/UJ

A post-digest spike was performed for those elements that did not meet the specified criteria (i.e., Pre-digestion/pre-distillation spike recovery falls outside of control limits and sample result is less than four times the spike amount added, exception: Ag, Hg).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

#### 8. ICP SERIAL DILUTION

A serial dilution was performed for ICP analysis with every twenty or fewer samples of a similar matrix, or one per sample delivery group, whichever is more frequent.

Yes X      No \_\_\_\_\_

Comments:      None.

The serial dilution was without interference problems as defined by the SOW.

Yes \_\_\_\_\_ No X

Comments:      The following serial dilution %Ds were greater than 10% and the original sample result was at least 50\* the MDL:

Element	% Difference	Samples Affected	Qualifiers
Arsenic	18%	All samples	J
Lead	34%		
Potassium	19%		
Sodium	27%		
Zinc	24%		

**9. REGIONAL QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)**

Regional QA/QC was conducted as initiated by the EPA Region 8.

Yes    No    NA X

Comments: The SDG shows no indication of EPA Region 8 initiating any additional QA / QC.

**10. FORM 10 - INTERELEMENT CORRECTION FACTORS FOR ICP**

Interelement corrections for ICP were reported.

Yes X No   

Comments: None.

**11. FORM 12 - PREPARATION LOG**

Information on the preparation of samples for analysis was reported on Form 12.

Yes X No   

Comments: None.

**12. FORM 13 - ANALYSIS RUN LOG**

A Form 13 with the required information was filled out for each analysis run in the data package.

Yes X No   

Comments: None.

**13. Additional Comments or Problems/Resolutions Not Addressed Above**

Page 1 of the Evidence Audit Checklist (EAC) indicates three airbills are associated with this SDG, however documentation is only provided for Airbill Number 3430, which documents the shipment of four packages. The laboratory only documented receipt of two coolers, so it is unclear as to what the other two packages were that were included on the airbill.

**INORGANIC DATA QUALITY ASSURANCE REVIEW****Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality. Use of additional qualifiers should be carefully considered. Definitions for all qualifiers used should be provided with each report.

**GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA**

- R - Reported value is "rejected." The data are unusable. Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity and is the approximate concentration of the analyte in the sample.
- J+ - The associated numerical value is an estimated quantity but the result may be biased high.
- J- - The associated numerical value is an estimated quantity but the result may be biased low.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound may or may not be present in the sample.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.) ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

## ACRONYMS

AA	Atomic Absorption
Ag	Silver
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CRA	CRQL standard required for AA
CRQL	Contract Required Quantitation Limit
CRI	CRQL standard required for ICP
CV	Cold Vapor
EPA	U.S. Environmental Protection Agency
GFAA	Graphite Furnace Atomic Absorption
Hg	Mercury
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICSA	Interference Check Sample (Solution A)
ICSAB	Interference Check Sample (Solution AB)
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LRA	Linear Range Verification Analysis
MDL	Method Detection Limit
PDS	Post Digestion Spike
QC	Quality Control
RPD	Relative Percent Difference
RPM	Regional Project Manager
RSD	Percent Relative Standard Deviation
SA	Spike Added
SAS	Special Analytical Services
SDG	Sample Delivery Group
SOW	Statement of Work
SR	Sample Result
SSR	Spiked Sample Result

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L0

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0  
 Matrix: Soil Lab Sample ID: 1030771001  
 % Solids: 79.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8100			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1740			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	38100			P
7439-92-1	Lead				
7439-95-4	Magnesium	5830			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	440.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	30.8	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ 11  
J+ 74  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L0

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771001

% Solids: 79.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.53	J	N	MS
7440-38-2	Arsenic	17.7		E	MS
7440-39-3	Barium	121.		*	MS
7440-41-7	Beryllium	0.38	J	E	MS
7440-43-9	Cadmium	0.48	J		MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.9			MS
7440-48-4	Cobalt	13.2		*	MS
7440-50-8	Copper	63.6			MS
7439-89-6	Iron				
7439-92-1	Lead	379.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1420		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	6.3			MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.55	J	N	MS
7440-22-4	Silver	1.3		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.30	J	N	MS
7440-62-2	Vanadium	46.3			MS
7440-66-6	Zinc	184.		E	MS
57-12-5	Cyanide				

1.30 J N  
J N KA 3/10/10  
0.630 N  
0.630 N  
I A 3/10/10  
J Z  
3.10 J N  
J+ N  
J+ N  
J N  
2/18/10

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA ~ CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771002

% Solids: 74.7

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13100			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2020			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	35000			P
7439-92-1	Lead				
7439-95-4	Magnesium	8970			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	501.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	21.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ H  
J+ H  
2/18/11

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36LL

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0  
 Matrix: Soil Lab Sample ID: 1030771002  
 % Solids: 74.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.45	J	N	MS
7440-38-2	Arsenic	28.1		E	MS
7440-39-3	Barium	90.8		*	MS
7440-41-7	Beryllium	0.73		E	MS
7440-43-9	Cadmium	2.0			MS
7440-70-2	Calcium				
7440-47-3	Chromium	9.0			MS
7440-48-4	Cobalt	11.2		*	MS
7440-50-8	Copper	193.			MS
7439-89-6	Iron				
7439-92-1	Lead	543.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	3650		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.2			MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.32	J	N	MS
7440-22-4	Silver	1.7		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.40	J	N	MS
7440-62-2	Vanadium	32.2			MS
7440-66-6	Zinc	332.		E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L2

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771003

% Solids: 62.2

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5960			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	592.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	116000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	3260			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	842.		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	65.3	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

804 U 71

T + H

J + M  
2/18/10

**Color Before:** BROWN      **Clarity Before:**      **Texture:** MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L2

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771003

% Solids: 62.2

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.86	J	N	MS
7440-38-2	Arsenic	62.5		E	MS
7440-39-3	Barium	121.		*	MS
7440-41-7	Beryllium	0.30	J	E	MS
7440-43-9	Cadmium	1.4			MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.5			MS
7440-48-4	Cobalt	5.4		*	MS
7440-50-8	Copper	177.			MS
7439-89-6	Iron				
7439-92-1	Lead	546.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1130		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.5			MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.86	J	N	MS
7440-22-4	Silver	5.1		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.30	J	N	MS
7440-62-2	Vanadium	42.6			MS
7440-66-6	Zinc	444.		E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L3

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771004

% Solids: 70.9

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12200			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1110			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	31900			P
7439-92-1	Lead				
7439-95-4	Magnesium	5340			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	648.	E		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	29.5	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ M  
J+ M  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L3

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771004

% Solids: 70.9

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.45	J	N	MS
7440-38-2	Arsenic	36.8		E	MS
7440-39-3	Barium	147.		*	MS
7440-41-7	Beryllium	1.4		E	MS
7440-43-9	Cadmium	7.4			MS
7440-70-2	Calcium				
7440-47-3	Chromium	9.6			MS
7440-48-4	Cobalt	12.9		*	MS
7440-50-8	Copper	546.			MS
7439-89-6	Iron				
7439-92-1	Lead	779.		DE	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	5130		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	6.9			MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.70	J	N	MS
7440-22-4	Silver	2.8		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.40	J	N	MS
7440-62-2	Vanadium	33.2			MS
7440-66-6	Zinc	1990		DE	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0  
 Matrix: Soil Lab Sample ID: 1030771005  
 % Solids: 48.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8140			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	851.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	154000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	4670			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1120		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	98.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1030771005 K

J+ K

J+ K  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L4

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771005

% Solids: 48.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.7	J	N	MS
7440-38-2	Arsenic	86.3		E	MS
7440-39-3	Barium	168.		*	MS
7440-41-7	Beryllium	0.34	J	E	MS
7440-43-9	Cadmium	1.2			MS
7440-70-2	Calcium				
7440-47-3	Chromium	9.8			MS
7440-48-4	Cobalt	6.1		*	MS
7440-50-8	Copper	251.			MS
7439-89-6	Iron				
7439-92-1	Lead	656.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1400		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.8			MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.2	J	N	MS
7440-22-4	Silver	7.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.31	J	N	MS
7440-62-2	Vanadium	44.3			MS
7440-66-6	Zinc	464.		E	MS
57-12-5	Cyanide				

2.0 UJ M  
J M KKA 31014  
1.0 U K

J M HA 31014

J K

5.1 UJ K  
J + M

J + K

J K  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L5

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0  
 Matrix: Soil Lab Sample ID: 1030771008  
 % Solids: 31.6 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5480			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1540			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	359000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	644.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	146.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	31.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1580 U M

J+ M

J+ M  
2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L5

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771008

% Solids: 31.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.31	J	N	MS
7440-38-2	Arsenic	19.1		E	MS
7440-39-3	Barium	17.4		*	MS
7440-41-7	Beryllium	0.79	J	E	MS
7440-43-9	Cadmium	0.23	J		MS
7440-70-2	Calcium				
7440-47-3	Chromium	2.6	J		MS
7440-48-4	Cobalt	1.5	J	*	MS
7440-50-8	Copper	20.2			MS
7439-89-6	Iron				
7439-92-1	Lead	115.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	280.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.2	J		MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.16	J	N	MS
7440-22-4	Silver	0.31	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	1.6	U	N	MS
7440-62-2	Vanadium	45.9			MS
7440-66-6	Zinc	282.		E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: FINE

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN

EPA SAMPLE NO.

MH36L6

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771009

% Solids: 52.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7030			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1420			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	114000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	3810			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1560		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	118.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+  $\pi$   
J+  $\pi$   
2/18/11

Color Before: ORANGE Clarity Before: Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:** .

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L6

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771009

% Solids: 52.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	2.8		N	MS
7440-38-2	Arsenic	50.2		E	MS
7440-39-3	Barium	146.		*	MS
7440-41-7	Beryllium	0.46	J	E	MS
7440-43-9	Cadmium	2.9			MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.4			MS
7440-48-4	Cobalt	3.9		*	MS
7440-50-8	Copper	279.			MS
7439-89-6	Iron				
7439-92-1	Lead	5720		DE	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1340		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.8			MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.4	J	N	MS
7440-22-4	Silver	12.1		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.60	J	N	MS
7440-62-2	Vanadium	47.7			MS
7440-66-6	Zinc	815.		E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: FINE

Color After: WHITE Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0  
 Matrix: Soil Lab Sample ID: 1030771010  
 % Solids: 76.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9570			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1530			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	57600			P
7439-92-1	Lead				
7439-95-4	Magnesium	6070			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	751.	E		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	62.3	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ M  
J+ K  
2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L7

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771010

% Solids: 76.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.45	J	N	MS
7440-38-2	Arsenic	20.3		E	MS
7440-39-3	Barium	97.3		*	MS
7440-41-7	Beryllium	0.45	J	E	MS
7440-43-9	Cadmium	0.90			MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.0			MS
7440-48-4	Cobalt	11.8		*	MS
7440-50-8	Copper	86.5			MS
7439-89-6	Iron				
7439-92-1	Lead	726.		DE	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1530		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.4			MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.2	J	N	MS
7440-22-4	Silver	1.7		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.39	J	N	MS
7440-62-2	Vanadium	47.3			MS
7440-66-6	Zinc	261.		E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.



USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L8

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771011

% Solids: 79.5

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.19	J	N	MS
7440-38-2	Arsenic	17.3		E	MS
7440-39-3	Barium	102.		*	MS
7440-41-7	Beryllium	0.53	J	E	MS
7440-43-9	Cadmium	0.12	J		MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.0			MS
7440-48-4	Cobalt	10.4		*	MS
7440-50-8	Copper	73.1			MS
7439-89-6	Iron				
7439-92-1	Lead	532.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	675.		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	7.1			MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.61	J	N	MS
7440-22-4	Silver	1.3		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.35	J	N	MS
7440-62-2	Vanadium	49.0			MS
7440-66-6	Zinc	73.8		E	MS
57-12-5	Cyanide				

1.3 U J m  
J n K A  
310111

0.63 U n  
0.63 U z

J K A  
310111

J H

3.1 U J H  
J + H

J + H  
J H  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: GRAY Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771012

% Solids: 20.1

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13400			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2310	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	238000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	913.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	231.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	44.5	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

24900  $\mu$

J + K

$$\sqrt{J} + n$$

Kota  
3/10/11

Color Before: ORANGE Clarity Before: Texture: FINE

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH36L9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: SDG No.: MH36L0

Matrix: Soil

Lab Sample ID: 1030771012

% Solids: 20.1

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.44	J	N	MS
7440-38-2	Arsenic	17.7		E	MS
7440-39-3	Barium	21.4	J	*	MS
7440-41-7	Beryllium	1.4	J	E	MS
7440-43-9	Cadmium	0.35	J		MS
7440-70-2	Calcium				
7440-47-3	Chromium	2.8	J		MS
7440-48-4	Cobalt	1.5	J	*	MS
7440-50-8	Copper	28.1			MS
7439-89-6	Iron				
7439-92-1	Lead	217.		E	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	336.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.3	J		MS
7440-09-7	Potassium				
7782-49-2	Selenium	12.4	U	N	MS
7440-22-4	Silver	0.71	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	2.5	U	N	MS
7440-62-2	Vanadium	41.8			MS
7440-66-6	Zinc	269.		E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: Texture: FINE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

**REGION VIII**  
**DATA VALIDATION REPORT**  
**INORGANIC**

Case/TDD No.	Site Name	Operable Unit	
40755 / 1008-16	Upper Animas Mining District		
RPM/OSC Name			
Sabrina Forrest			
Contractor Laboratory	Contract No.	SDG No.	Laboratory DPO/Region
ALS Laboratory Group	EPW05026	MH35H7	

Review Assigned Date: December 15, 2010Data Validator: Fred LuckReview Completion Date: February 18, 2011Report Reviewer: Lesley Boyd

Sample ID	Matrix	Analysis
MH35H7	Sediment	CLP -Metals
MH35J6	Soil - Surface	
MH35J7		
MH35J8		
MH35J9		
MH35K0		
MH35K1		
MH35K2		
MH35K3		
MH35K4		
MH35K5		
MH35K6		
MH35K7		

Sample ID	Matrix	Analysis
MH35K8	Sediment	CLP -Metals
MH35K9		
MH35L0		
MH35L1		
MH35L2		
MH35L3		

## DATA QUALITY STATEMENT

- Data are ACCEPTABLE according to EPA Functional guidelines with no qualifiers (flags) added by the reviewer.
- Data are UNACCEPTABLE according to EPA Functional Guidelines.
- Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X \_\_\_\_\_

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X \_\_\_\_\_ If yes, list the items that require attention:

**INORGANIC DATA VALIDATION REPORT****REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review," January 2010.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-15% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, Case No. 40755, SDG No. MH35H7, consisted of nineteen sediment / soil – Surface samples for metals by ICP-AES and ICP-MS (ISM01.2). The following table lists the data qualifiers added to the sample analyses. Please see Data Qualifier Definitions, attached to the end of this report.

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
MH35H7, MH35J7, MH35K1, MH35K2, MH35K4, MH35K5, MH35K7, MH35K8, MH35K9, MH35L1, MH35L2	Antimony	U	Blank Contamination	3
MH35H7, MH35J6, MH35J7, MH35J8, MH35J9, MH35K0 MH35K1, MH35K2, MH35K3, MH35K4, MH35K5, MH35K6, MH35K9, MH35L3	Beryllium			
MH35H7, MH35J7, MH35K2, MH35K5, MH35K9, MH35L3	Cadmium			
MH35J7, MH35J8, MH35J9, MH35K0, MH35K3, MH35K5, MH35K6, MH35K9, MH35L0, MH35L3	Calcium			
MH35K0, MH35K3, MH35K5	Chromium			
MH35J8, MH35J9, MH35K0, MH35K3, MH35K5, MH35L3	Cobalt			
MH35J7, MH35J8, MH35J9, MH35K0, MH35K3, MH35K5, MH35K9, MH35L3	Magnesium			
MH35J8, MH35J9, MH35K0, MH35K3, MH35K5, MH35L3	Nickel			
MH35J7, MH35J8, MH35K8, MH35K9, MH35L0, MH35L3	Potassium			
MH35H7, MH35J6, MH35J7, MH35J8, MH35J9, MH35K0, MH35K1, MH35K2, MH35K4, MH35K5, MH35K6, MH35K7, MH35K8, MH35K9, MH35L0, MH35L1, MH35L2, MH35L3	Selenium			
MH35H7	Silver			

# UOS

URS Operating Services, Inc.

Data Validation Report

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
MH35H7, MH35J6, MH35J7, MH35J8, MH35J9, MH35K0, MH35K1, MH35K2, MH35K3, MH35K4, MH35K5, MH35K6, MH35K7, MH35K8, MH35K9, MH35L0, MH35L1, MH35L2, MH35L3	Sodium	U	Blank Contamination	3
MH35K7, MH35K8, MH35L0, MH35L1, MH35L2	Beryllium	J+	Potentially false positive detection in ICS check sample	4
MH35H7, MH35J6, MH35J9, MH35K0, MH35K1, MH35K2, MH35K3, MH35K4, MH35K5, MH35K6, MH35K7, MH35L1, MH35L2	Potassium			
MH35J7, MH35J8, MH35K2, MH35K4, MH35K5, MH35K6, MH35K8, MH35K9, MH35L2, MH35L3	Thallium	J-	Potentially false negative detection in ICS check sample	
All Samples	Copper, Lead	J/UJ	Original & Duplicate both >5x the CRQL and RPD > 20%	6
	Antimony, Silver	J/UJ	MS <30%R, Post Digestion Spike %R ≥ 75%	7
	Barium, Copper	J+	MS >125%R, Post Digestion Spike not performed	
	Arsenic		MS > 125%R, Post Digestion Spike %R > 125%	
	Arsenic, Beryllium, Cadmium, Copper, Nickel, Sodium, Zinc	J/UJ	Serial Dilution %D > 10%	8

## 1. PRESERVATION AND HOLDING TIMES

All technical holding times and preservation criteria were met.

Yes             No  X  

Comments: The samples were analyzed within 180 days for the ICP metals. According to the Sample Log-In Sheet and case narrative, the two sample coolers were each received at a temperature of 7°C, which is outside the recommended temperature range of  $4 \pm 2^\circ\text{C}$ . The Sample Log-In Sheet further indicates that neither cooler contained a Cooler Temperature Indicator Bottle, as indicated on the form to be required. There is also no indication that SMO was contacted regarding this issue, neither is any documentation of the resolution or indication of how the cooler temperature was derived provided. The TR/COC also did not designate a sample for laboratory QC, but the documentation of the resolution of this issue is provided in the SDG.

When the sample preservation criteria are not met, but the sample analysis and extraction are within the technical holding times then professional judgment is used whether to qualify the data. No action was taken since the preservation exceedence was minimal and the extraction and holding times were well within the established parameters.

No other shipping or receiving problems were noted. Chain-of-custody, summary forms, and raw data were evaluated.

## 2. INSTRUMENT CALIBRATIONS: INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV AND CCV)

The initial and continuing calibration verification standards (ICV and CCV, respectively) met SOW requirements.

Yes  X        No       

Comments: None.

The calibration verification results were within 90-110% recovery for metals, 85-115% for cyanide, and 80-120% for mercury.

Yes  X        No       

Comments: None.

The continuing calibration standards were run at 10% frequency or every two hours.

Yes  X        No       

Comments: None.

### 3. BLANKS

The initial and continuing calibration blanks (ICB and CCB, respectively) met SOW requirements.

Yes X      No \_\_\_\_\_

Comments:      None.

The continuing calibration blanks were run at 10% frequency.

Yes X      No \_\_\_\_\_

Comments:      Continuing calibration blanks were run every 10 samples.

A laboratory/preparation blank was run at the frequency of one per twenty samples, or per sample delivery group (whichever is more frequent), and for each matrix analyzed.

Yes X      No \_\_\_\_\_

Comments:      None.

All analyzed blanks were free of contamination.

Yes \_\_\_\_\_      No X

Comments: The following table lists the blanks with contamination that resulted in sample qualification, elements present, affected samples, and data qualifiers:

## Blank Contaminants

Blank ID	Contaminant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
PB	Antimony	1	0.0097	0.026	MH35H7 MH35J7 MH35K1 MH35K2 MH35K4 MH35K5 MH35K7 MH35K8 MH35K9 MH35L1 MH35L2	0.19 1.2 0.26 0.25 0.54 0.99 0.41 0.59 5.2 0.71 0.34	1.5 U 1.3 U 1.1 U 1.1 U 1.1 U 1.1 U 1.2 U 1.3 U 6.8 U 1.7 U 1.2 U
PB	Beryllium	0.5	0.0032	0.013	MH35H7 MH35J6 MH35J7 MH35J8 MH35J9 MH35K0 MH35K1 MH35K2 MH35K3 MH35K4 MH35K5 MH35K6 MH35K9 MH35L3	0.68 0.19 0.22 0.16 0.21 0.32 0.30 0.20 0.11 0.35 0.13 0.19 0.84 0.11	0.76 U 0.60 U 0.65 U 0.78 U 0.56 U 0.55 U 0.57 U 0.55 U 0.54 U 0.54 U 0.55 U 0.55 U 3.4 U 3.0 U
PB	Cadmium	0.5	0.0027	0.005	MH35H7 MH35J7 MH35K2 MH35K5 MH35K9 MH35L3	0.25 0.58 0.55 0.53 1.7 2.8	0.76 U 0.65 U 0.55 U 0.55 U 3.4 U 3.0 U
PB	Calcium	500	1.7	9.992	MH35J7 MH35J8 MH35J9 MH35K0 MH35K3 MH35K5 MH35K6 MH35K9 MH35L0 MH35L3	369 405 57.7 259 34.8 48.6 246 2040 223 279	648 U 775 U 563 U 551 U 535 U 554 U 547 U 3380 U 718 U 2980 U
PB	Chromium	1	0.026	1.000	MH35K0 MH35K3 MH35K5	0.97 0.86 0.46	1.1 U 1.1 U 1.1 U
PB	Cobalt	1	0.0053	0.006	MH35J8 MH35J9 MH35K0 MH35K3 MH35K5 MH35L3	0.41 0.19 0.23 0.35 0.12 1.4	0.78 U 0.56 U 0.55 U 0.54 U 0.55 U 3.0 U

# UOS

URS Operating Services, Inc.

Data Validation Report

Blank ID	Contam-inant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
PB	Magnesium	500	1.2	2.971	MH35J7 MH35J8 MH35J9 MH35K0 MH35K3 MH35K5 MH35K9 MH35L3	477 375 45.9 72.4 38.2 118 2120 486	648 U 775 U 563 U 551 U 535 U 554 U 3380 U 2980 U
PB	Nickel	0.5	0.013	0.500	MH35J8 MH35J9 MH35K0 MH35K3 MH35K5 MH35L3	0.36 0.19 0.17 0.27 0.14 1.6	0.78 U 0.56 U 0.55 U 0.54 U 0.55 U 3.0 U
PB	Potassium	500	5.8	21.198	MH35J7 MH35J8 MH35K8 MH35K9 MH35L0 MH35L3	319 418 645 1130 307 773	648 U 775 U 664 U 3380 U 718 U 2980 U
PB	Selenium	2.5	0.036	2.500	MH35H7 MH35J6 MH35J7 MH35J8 MH35J9 MH35K0 MH35K1 MH35K2 MH35K4 MH35K5 MH35K6 MH35K7 MH35K8 MH35K9 MH35L0 MH35L1 MH35L2 MH35L3	1.1 2.7 1.2 1.4 1.7 1.8 1.3 0.60 0.83 0.90 1.3 0.52 0.35 2.0 0.66 0.59 0.59 4.2	3.8 U 3.0 U 3.2 U 3.9 U 2.8 U 2.8 U 2.8 U 2.7 U 2.8 U 2.7 U 2.7 U 3.0 U 3.3 U 17 U 3.6 U 4.3 U 3.0 U 15 U
PB	Silver	0.5	0.0023	0.004	MH35H7	0.41	0.76 U
PB	Sodium	500	0.73	12.529	MH35H7 MH35J6 MH35J7 MH35J8 MH35J9 MH35K0 MH35K1 MH35K2 MH35K3 MH35K4 MH35K5 MH35K6	80.1 77.4 38.8 43.9 22.3 59.0 37.7 105 53.9 64.3 53.1 70.9	761 U 604 U 648 U 775 U 563 U 551 U 569 U 552 U 535 U 541 U 554 U 547 U

Blank ID	Contaminant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
PB	Sodium	500	0.73	12.529	MH35K7 MH35K8 MH35K9 MH35L0 MH35L1 MH35L2 MH35L3	59.2 22.1 139 23.0 44.3 16.7 48.1	597 U 664 U 3380 U 718 U 855 U 600 U 2980 U

#### 4. INDUCTIVELY COUPLED PLASMA - INTERFERENCE CHECK SAMPLE (ICP-ICS)

The ICP interference check sample (ICS) was run at the beginning and end of each sample analysis run and every 20 analytical samples, but not prior to the ICV.

Yes X      No \_\_\_\_\_

Comments:      None.

Percent recovery of the analytes in the ICS solutions were within the range of 80-120% or the result was within  $\pm$  the CRQL.

Yes X      No \_\_\_\_\_

Comments:      None.

Sample results for aluminum, calcium, iron, and magnesium were less than the ICSA values or no interference was noted.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

Sample results contain potential false positives and false negatives.

Yes X      No \_\_\_\_\_

Comments:      The following table lists the elements with potential false positives or false negatives that resulted in sample qualification, affected samples, and data qualifiers:

## ICP Interferences

Element	Concentration Found in ICSA Sample (ug/L)	Affected Samples	Concentration Found in Sample (mg/Kg)	Qualifier/ Adjustment
Beryllium	0.36	MH35K7 MH35K8 MH35L0 MH35L1 MH35L2	>MDL	J+
Potassium	494	MH35H7 MH35J6 MH35J9 MH35K0 MH35K1 MH35K2 MH35K3 MH35K4 MH35K5 MH35K6 MH35K7 MH35L1 MH35L2		
Thallium	-0.05	MH35J7 MH35J8 MH35K2 MH35K4 MH35K5 MH35K6 MH35K8 MH35K9 MH35L2 MH35L3	0.23 0.10 0.36 0.38 0.43 0.37 0.41 0.31 0.44 0.19	J-

**5. LABORATORY CONTROL SAMPLE**

The laboratory control sample (LCS) was prepared and analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_

Comments:      None.

All results were within control limits OF 70-130%.

Yes X      No \_\_\_\_\_

Comments:      None.

## 6. FORM 6 & 12 - DUPLICATE SAMPLE ANALYSIS

Duplicate sample analysis was performed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No            NA      

Comments:      None.

The RPDs were calculated correctly.

Yes X      No            NA      

Comments:      None.

For sample concentrations greater than five times the CRQL, RPDs were within  $\pm 20\%$  (limits of  $\pm 35\%$  apply for soil/sediments/tailings samples).

Yes            No X      NA      

Comments:      The following table lists the duplicate results outside control limits, samples affected, and data qualifiers:

Element	RPD	QC Limit	Samples Affected	Qualifiers
Copper	43%	20%	All samples	J / UJ
Lead	71%			

For sample concentrations less than five times the CRQL, duplicate analysis results were within the control window of CRQL (absolute difference < CRQL for soils).

Yes X      No            NA      

Comments:      None.

## 7. SPIKE SAMPLE ANALYSIS

A matrix spike sample was analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No            NA      

Comments:      None.

The percent recoveries (%Rs) were calculated correctly.

Yes X      No \_\_\_\_\_ NA \_\_\_\_\_

Comments:      None.

Spike recoveries were within the range of 75-125% (an exception is granted where the sample concentration is four times the spike concentration).

Yes X      No X \_\_\_\_\_

Comments:      The following table lists the spike recoveries outside control limits, post digestion spike recoveries, samples affected, and data qualifiers:

Element	Matrix Spike %R	Post-Digestion %R	Samples Affected	Qualifiers
Antimony	17%	85%	All samples	J/UJ
Arsenic	130%	944%		J+
Barium	128%	NA		
Copper	134%	NA		
Silver	11%	88%		J/UJ

NA – No Post digest spike analyzed

A post-digest spike was performed for those elements that did not meet the specified criteria (i.e., Pre-digestion/pre-distillation spike recovery falls outside of control limits and sample result is less than four times the spike amount added, exception: Ag, Hg).

Yes \_\_\_\_\_ No X      NA \_\_\_\_\_

Comments:      For Arsenic and Copper the spike recoveries were outside of the Control Limits, but no Post-Digest Spike was performed.

## 8. ICP SERIAL DILUTION

A serial dilution was performed for ICP analysis with every twenty or fewer samples of a similar matrix, or one per sample delivery group, whichever is more frequent.

Yes X      No \_\_\_\_\_

Comments:      None.

The serial dilution was without interference problems as defined by the SOW.

Yes    No X

Comments: The following serial dilution %Ds were greater than 10% and the original sample result was at least 50\* the MDL:

Element	% Difference	Samples Affected	Qualifiers
Arsenic	21%	All samples	J
Beryllium	19%		
Cadmium	22%		
Copper	14%		
Nickel	15%		
Sodium	53%		
Zinc	29%		

## 9. REGIONAL QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

Regional QA/QC was conducted as initiated by the EPA Region 8.

Yes    No    NA X

Comments: The SDG shows no indication of EPA Region 8 initiating any additional QA / QC.

## 10. FORM 10 - INTERELEMENT CORRECTION FACTORS FOR ICP

Interelement corrections for ICP were reported.

Yes X      No   

Comments: None.

## 11. FORM 12 - PREPARATION LOG

Information on the preparation of samples for analysis was reported on Form 12.

Yes X      No   

Comments: None.

**12. FORM 13 - ANALYSIS RUN LOG**

A Form 13 with the required information was filled out for each analysis run in the data package.

Yes X      No \_\_\_\_\_

Comments:      None.

**13. Additional Comments or Problems/Resolutions Not Addressed Above**

Page 1 of the Evidence Audit Checklist (EAC) indicates three airbills are associated with this SDG, however documentation is only provided for Airbill Number 3430, which documents the shipment of four packages. The laboratory only documented receipt of two coolers, so it is unclear as to what the other two packages were that were included on the airbill.

**INORGANIC DATA QUALITY ASSURANCE REVIEW****Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality. Use of additional qualifiers should be carefully considered. Definitions for all qualifiers used should be provided with each report.

**GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA**

- R - Reported value is "rejected." The data are unusable. Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity and is the approximate concentration of the analyte in the sample.
- J+ - The associated numerical value is an estimated quantity but the result may be biased high.
- J- - The associated numerical value is an estimated quantity but the result may be biased low.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound may or may not be present in the sample.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.)  
ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

**ACRONYMS**

AA	Atomic Absorption
Ag	Silver
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CRA	CRQL standard required for AA
CRQL	Contract Required Quantitation Limit
CRI	CRQL standard required for ICP
CV	Cold Vapor
EPA	U.S. Environmental Protection Agency
GFAA	Graphite Furnace Atomic Absorption
Hg	Mercury
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma

ICS	Interference Check Sample
ICSA	Interference Check Sample (Solution A)
ICSAB	Interference Check Sample (Solution AB)
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LRA	Linear Range Verification Analysis
MDL	Method Detection Limit
PDS	Post Digestion Spike
QC	Quality Control
RPD	Relative Percent Difference
RPM	Regional Project Manager
RSD	Percent Relative Standard Deviation
SA	Spike Added
SAS	Special Analytical Services
SDG	Sample Delivery Group
SOW	Statement of Work
SR	Sample Result
SSR	Spiked Sample Result

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770001  
 % Solids: 65.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5550			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1500			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	30000			P
7439-92-1	Lead				
7439-95-4	Magnesium	2560			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	934.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	80.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + K  
761 UJ  
2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35H7

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770001

% Solids: 65.7

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.19	J	N	MS
7440-38-2	Arsenic	11.7		NE	MS
7440-39-3	Barium	190.		N	MS
7440-41-7	Beryllium	0.68	J	E	MS
7440-43-9	Cadmium	0.25	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.8			MS
7440-48-4	Cobalt	4.3		*	MS
7440-50-8	Copper	34.5		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	72.5		*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	568.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.9		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.1	J		MS
7440-22-4	Silver	0.41	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.52	J		MS
7440-62-2	Vanadium	45.2			MS
7440-66-6	Zinc	99.0		*E	MS
57-12-5	Cyanide				

1.50 ✓  
J+ ✓  
J+ ✓  
0.760 J ✓  
0.760 J ✓

~~J~~ KA  
~~J+~~ 3/10/11  
J ✓

J ✓

J ✓  
3.80 ✓  
0.760 J ✓

~~J~~ KA  
~~J~~ 3/10/11

2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: GRAY Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J6

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

**Matrix:** Soil

Lab Sample ID: 1030770004

% Solids: 82.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

J+  $\pi$   
604 UJ  $\pi$   
2/18/11

Color Before: BROWN Clarity Before: Texture: MEDIUM

Clarity Before: **Texture: MEDIUM**

Color After: YELLOW Clarity After: CLEAR Artifacts:

Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J6

Lab Name: ALS Laboratory Group

Contract.: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770004

% Solids: 82.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.8		N	MS
7440-38-2	Arsenic	9.1		NE	MS
7440-39-3	Barium	105.		N	MS
7440-41-7	Beryllium	0.19	J	E	MS
7440-43-9	Cadmium	0.63		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.9			MS
7440-48-4	Cobalt	1.3		*	MS
7440-50-8	Copper	195.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	6440		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	452.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.7	J		MS
7440-22-4	Silver	103.		DN	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.50	J		MS
7440-62-2	Vanadium	26.0			MS
7440-66-6	Zinc	167.		*E	MS
57-12-5	Cyanide				

J+ K  
 J+ K  
 J+ K  
 0.60 UJ K  
 J+ M  
 J+ K  
 J+ K  
 J+ K  
 J+ K  
 3.00 K  
 J+ K  
 J+ K  
 J+ K  
 2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J7

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770005

% Solids: 77.2

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1470			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	369.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	150000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	477.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	319.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	38.8	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

648 U K8A  
310111

648U M

648U M

648 U J M  
2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J7

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770005

% Solids: 77.2

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.2	J	N	MS
7440-38-2	Arsenic	15.7		NE	MS
7440-39-3	Barium	18.7		N	MS
7440-41-7	Beryllium	0.22	J	E	MS
7440-43-9	Cadmium	0.58	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	1.8			MS
7440-48-4	Cobalt	1.0		*	MS
7440-50-8	Copper	104.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1850		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	630.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.2	J		MS
7440-22-4	Silver	10.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.23	J		MS
7440-62-2	Vanadium	23.7			MS
7440-66-6	Zinc	265.		*E	MS
57-12-5	Cyanide				

1.3 U <sup>✓</sup>  
 J+ <sup>✓</sup>  
 J+ <sup>✓</sup>  
 0.65 U J <sup>✓</sup>  
 0.65 U J <sup>✓</sup>  
~~J~~ <sup>K2A</sup>  
~~J+ m~~  
 J <sup>m</sup>  
 J <sup>m</sup>  
 J <sup>m</sup>  
 3.2 U <sup>✓</sup>  
 J <sup>m</sup>  
 0.5 J- <sup>✓</sup>  
~~J~~ <sup>K2A</sup>  
 2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J8

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATA C Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770006  
 % Solids: 64.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2260			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	405.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	308000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	375.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	418.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	43.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

7750<sup>m</sup>

7750<sup>m</sup>

7750<sup>m</sup>

7750 J<sup>m</sup>  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J8

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770006

% Solids: 64.5

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	12.0		N	MS
7440-38-2	Arsenic	29.3		NE	MS
7440-39-3	Barium	68.3		N	MS
7440-41-7	Beryllium	0.16	J	E	MS
7440-43-9	Cadmium	35.4		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	2.2			MS
7440-48-4	Cobalt	0.41	J	*	MS
7440-50-8	Copper	286.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	5080		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	136.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.36	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.4	J		MS
7440-22-4	Silver	27.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.10	J		MS
7440-62-2	Vanadium	49.7			MS
7440-66-6	Zinc	11300		D*E	MS
57-12-5	Cyanide				

$J + \frac{m}{n}$   
 $J + \frac{m}{n}$   
 $0.78 U J^n$   
 $J \frac{m}{n}$   
  
 $0.78 U J^n$   
 $J + \frac{m}{n}$   
 $J \frac{m}{n}$   
  
 $0.78 U J^n$   
  
 $3.9 U \frac{m}{n}$   
 $J \frac{m}{n}$   
  
 $\frac{J - \frac{m}{n}}{J} \xrightarrow{\text{KoA}} 2/18/11$

Color Before: BROWN Clarity Before: Texture: COARSE

Clarity Before: **COARSE**

Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Clarity After: CLEAR Artifacts:

## Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J9

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770007  
 % Solids: 88.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1130			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	57.7	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	8170			P
7439-92-1	Lead				
7439-95-4	Magnesium	45.9	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	714.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	22.3	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

563U<sup>m</sup>

563U<sup>m</sup>

J+ Z

563UJ<sup>m</sup>  
2/18/11

Color Before: YELLOW Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35J9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770007

% Solids: 88.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	13.5		N	MS
7440-38-2	Arsenic	34.9		NE	MS
7440-39-3	Barium	83.8		N	MS
7440-41-7	Beryllium	0.21	J	E	MS
7440-43-9	Cadmium	5.0		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	1.3			MS
7440-48-4	Cobalt	0.19	J	*	MS
7440-50-8	Copper	211.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	3880		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	423.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.19	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.7	J		MS
7440-22-4	Silver	34.6		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.61			MS
7440-62-2	Vanadium	7.8			MS
7440-66-6	Zinc	1400		D*E	MS
57-12-5	Cyanide				

J M  
J+ M  
J+ H  
0.56 U J M  
J M

0.56 U M  
J+ M  
J M

0.56 U J M  
2.8 U M  
J M  
~~J~~ K A 310111  
J M  
2/18/11

Color Before: YELLOW Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: WHITE Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K0

Lab Name: ALS Laboratory Group Contract: EPW09036

Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil Lab Sample ID: 1030770008

% Solids: 90.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1450			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	259.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	16900			P
7439-92-1	Lead				
7439-95-4	Magnesium	72.4	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1240			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	59.0	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

551 U H

551 U H

J + H

551 U J Z  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K0

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770008  
 % Solids: 90.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	11.7		N	MS
7440-38-2	Arsenic	38.6		NE	MS
7440-39-3	Barium	97.2		N	MS
7440-41-7	Beryllium	0.32	J	E	MS
7440-43-9	Cadmium	7.6		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	0.97	J		MS
7440-48-4	Cobalt	0.23	J	*	MS
7440-50-8	Copper	471.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	4920		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	122.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.17	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.8	J		MS
7440-22-4	Silver	54.0		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.85			MS
7440-62-2	Vanadium	12.0			MS
7440-66-6	Zinc	2100		D*E	MS
57-12-5	Cyanide				

J <sup>2</sup>  
 J+ <sup>n</sup>  
 J+ <sup>n</sup>  
 0.55 UJ <sup>n</sup>  
 J <sup>n</sup>  
 1.1 U <sup>n</sup>  
 0.55 U <sup>n</sup>  
 J+ <sup>n</sup>  
 J <sup>n</sup>  
 0.55 UJ <sup>n</sup>  
 2.8 U <sup>n</sup>  
 J <sup>n</sup>  
 K.A  
 3/10 <sup>n</sup>  
 2/18/11

Color Before: YELLOW Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770009

% Solids: 87.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2020			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	807.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	21500			P
7439-92-1	Lead				
7439-95-4	Magnesium	950.			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1460			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	37.7	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + M

569 UJ X  
2/18/11

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770009

% Solids: 87.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.26	J	N	MS
7440-38-2	Arsenic	90.2		NE	MS
7440-39-3	Barium	72.1		N	MS
7440-41-7	Beryllium	0.30	J	E	MS
7440-43-9	Cadmium	1.1		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	2.3			MS
7440-48-4	Cobalt	0.88		*	MS
7440-50-8	Copper	111.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	4510		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	843.		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.74		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.3	J		MS
7440-22-4	Silver	8.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	1.2		D	MS
7440-62-2	Vanadium	17.5			MS
7440-66-6	Zinc	319.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: GREEN Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K2

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.:  SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770010  
 % Solids: 90.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11200			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1360			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	36000			P
7439-92-1	Lead				
7439-95-4	Magnesium	11100			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	872.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	105.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + M  
552 UJ 2/18/11

Color Before: BROWN Clarity Before:  Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K2

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770010  
 % Solids: 90.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.25	J	N	MS
7440-38-2	Arsenic	96.8		NE	MS
7440-39-3	Barium	34.9		N	MS
7440-41-7	Beryllium	0.20	J	E	MS
7440-43-9	Cadmium	0.55		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	11.9			MS
7440-48-4	Cobalt	5.5		*	MS
7440-50-8	Copper	47.1		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1030		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1620		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.60	J		MS
7440-22-4	Silver	5.7		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.36	J	D	MS
7440-62-2	Vanadium	62.1			MS
7440-66-6	Zinc	187.		*E	MS
57-12-5	Cyanide				

1.1 U <sup>H</sup>  
 J+ <sup>H</sup>  
 J+ <sup>H</sup>  
 0.55 U J <sup>H</sup>  
 0.55 U J <sup>H</sup>

~~J~~ <sup>K3A</sup>  
 J+ <sup>H</sup>  
 J <sup>H</sup>

J <sup>H</sup>  
 2.8 U <sup>H</sup>  
 J <sup>H</sup>  
 J- <sup>H</sup>  
 J <sup>H</sup>

2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: WHITE Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN

EPA SAMPLE NO.

MH35K3

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

**Matrix:** Soil

Lab Sample ID: 1030770011

% Solids: 93.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	665.			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	34.8	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	22200			P
7439-92-1	Lead				
7439-95-4	Magnesium	38.2	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1200			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	53.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

5350 <sup>m</sup>

535 U<sup>7</sup>

J + 70

535 UJ<sup>X</sup>  
2/18/11

Color Before: YELLOW Clarity Before: Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference



USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K4

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

**Matrix:** Soil

Lab Sample ID: 1030770012

% Solids: 92.5

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

J +  $\pi$   
541 UJ<sup>2</sup>  
2/18/04

Color Before: YELLOW Clarity Before: Texture: MEDIUM

Clarity Before: **Texture: MEDIUM**

Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:**

Clarity After: CLEAR Artifacts:

#### **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K4

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATA<sub>C</sub> Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
Matrix: Soil Lab Sample ID: 1030770012  
% Solids: 92.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.54	J	N	MS
7440-38-2	Arsenic	32.8		NE	MS
7440-39-3	Barium	46.1		N	MS
7440-41-7	Beryllium	0.35	J	E	MS
7440-43-9	Cadmium	0.70		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	10.0			MS
7440-48-4	Cobalt	4.6		*	MS
7440-50-8	Copper	33.1		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	2260		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	3280		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.83	J		MS
7440-22-4	Silver	4.6		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.38	J		MS
7440-62-2	Vanadium	60.8			MS
7440-66-6	Zinc	210.		*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN

EPA SAMPLE NO.

MH35K5

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770013

% Solids: 90.3

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

554 U <sup>M</sup>

55407

ST + H

554 UJ <sup>Sal</sup>  
2/18/04

Color Before: GRAY Clarity Before: Texture: MEDIUM

Clarity Before: **Texture: MEDIUM**

Color After: YELLOW Clarity After: CLEAR Artifacts:

Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K5

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770013  
 % Solids: 90.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.99	J	N	MS
7440-38-2	Arsenic	13.6		NE	MS
7440-39-3	Barium	37.1		N	MS
7440-41-7	Beryllium	0.13	J	E	MS
7440-43-9	Cadmium	0.53		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	0.46	J		MS
7440-48-4	Cobalt	0.12	J	*	MS
7440-50-8	Copper	63.1		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1050		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	135.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	0.14	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.90	J		MS
7440-22-4	Silver	6.9		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.43	J		MS
7440-62-2	Vanadium	4.9			MS
7440-66-6	Zinc	140.		*E	MS
57-12-5	Cyanide				

1.1 U <sup>m</sup>  
J+ <sup>m</sup>  
J+ <sup>m</sup>  
0.55 U J <sup>m</sup>  
0.55 U J <sup>m</sup>  
  
1.1 U <sup>m</sup>  
0.55 U <sup>m</sup>  
J+ <sup>m</sup>  
J <sup>m</sup>  
  
0.55 U J <sup>m</sup>  
2.8 U <sup>m</sup>  
J <sup>m</sup>  
J- <sup>m</sup> KA  
J <sup>m</sup>  
2/18/11

Color Before: GREEN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: GREEN Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K6

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770014  
 % Solids: 91.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3270			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	246.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	46300		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	1920			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	769.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	70.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

547 U

J +

547 UJ  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K6

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770014

% Solids: 91.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	3.6		N	MS
7440-38-2	Arsenic	37.7		NE	MS
7440-39-3	Barium	68.4		N	MS
7440-41-7	Beryllium	0.19	J	E	MS
7440-43-9	Cadmium	9.0		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	2.7			MS
7440-48-4	Cobalt	1.5		*	MS
7440-50-8	Copper	285.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	3170		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	433.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.4		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.3	J		MS
7440-22-4	Silver	22.9		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.37	J		MS
7440-62-2	Vanadium	15.4			MS
7440-66-6	Zinc	2580		D*E	MS
57-12-5	Cyanide				

m  
 J + N  
 J + N  
 0.55 UJ Z  
 J + N  
 J + N  
 J + N  
 J + N  
 J + N  
 J + N  
 J + N  
 2.7 U K A 3/10/11  
 J + N  
 J + N  
 J + N  
 2/18/11

Color Before: BROWN Clarity Before:  Texture: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770015  
 % Solids: 83.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19500			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1540			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	55900		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	9940			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1090			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	59.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ *z*  
597 UJ *z*  
2/18/14

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770015  
 % Solids: 83.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.41	J	N	MS
7440-38-2	Arsenic	31.9		NE	MS
7440-39-3	Barium	154.		N	MS
7440-41-7	Beryllium	0.79		E	MS
7440-43-9	Cadmium	3.7		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	9.9			MS
7440-48-4	Cobalt	21.4		*	MS
7440-50-8	Copper	162.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1070		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	5570		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	9.5		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.52	J		MS
7440-22-4	Silver	2.7		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.56	J		MS
7440-62-2	Vanadium	47.5			MS
7440-66-6	Zinc	498.		*E	MS
57-12-5	Cyanide				

1.2 U <sup>11</sup>  
 J+ N  
 J+ N  
 J+ N  
 J N  
~~J~~ <sup>KA</sup> 3/10/11  
 J+ N  
 J N  
 J N  
 J N  
 J N  
 J N  
 3.0 U <sup>11</sup>  
 J N  
~~J~~ <sup>KA</sup> 3/10/11  
 J N  
 2/18/11

Color Before: BROWN Clarity Before: MEDIUM

Color After: BROWN Clarity After: CLOUDY Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K8

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770016  
 % Solids: 75.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13600			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1310			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	37200			P
7439-92-1	Lead				
7439-95-4	Magnesium	7200			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	645.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	22.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

664 U N

664 U J N

2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K8

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770016  
 % Solids: 75.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.59	J	N	MS
7440-38-2	Arsenic	25.8		NE	MS
7440-39-3	Barium	74.3		N	MS
7440-41-7	Beryllium	1.3		E	MS
7440-43-9	Cadmium	6.0		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.1			MS
7440-48-4	Cobalt	12.3		*	MS
7440-50-8	Copper	516.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	481.		*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	4710		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	10.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.35	J		MS
7440-22-4	Silver	2.0		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.41	J		MS
7440-62-2	Vanadium	32.5			MS
7440-66-6	Zinc	651.		D*E	MS
57-12-5	Cyanide				

1,3 U H  
J+ H  
J+ H  
J+ H  
J H  
~~J~~ RA 3/10/11  
J+ H  
J H  
J H  
3,3 U H  
J H  
J- H  
~~J~~ RA 3/10/11  
J H  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: TAN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

**Matrix:** Soil

Lab Sample ID: 1030770017

% Solids: 14.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6720			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2040	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	141000			P
7439-92-1	Lead				
7439-95-4	Magnesium	2120	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1130	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	139.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

3380 U

3380 U

3380 U

3380 UJ<sup>1</sup>  
2/18/01

Color Before: BROWN

## Clarity Before:

Texture: MEDIUM

Color After: YELLOW

Clarity After: CLEAR

#### **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35K9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770017

% Solids: 14.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	5.2	J	N	MS
7440-38-2	Arsenic	42.6		NE	MS
7440-39-3	Barium	119.		N	MS
7440-41-7	Beryllium	0.84	J	E	MS
7440-43-9	Cadmium	1.7	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	19.7			MS
7440-48-4	Cobalt	4.8		*	MS
7440-50-8	Copper	303.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	668.		*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1180			MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.9		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.0	J		MS
7440-22-4	Silver	27.1		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.31	J		MS
7440-62-2	Vanadium	20.8			MS
7440-66-6	Zinc	350.		*E	MS
57-12-5	Cyanide				

6.8 U <sup>#</sup>  
 J+ <sup>#</sup>  
 J+ <sup>#</sup>  
 3.4 U J <sup>#</sup>  
 3.4 U J <sup>#</sup>  
~~J~~ <sup>#</sup> KA 3/10/11  
 J+ <sup>#</sup>  
 J <sup>#</sup>  
 J <sup>#</sup>  
 17 U <sup>#</sup>  
 J <sup>#</sup>  
 J- <sup>#</sup>  
 J <sup>#</sup> KA 3/10/11  
 J <sup>#</sup>  
 2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: FINE

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35LO

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
Matrix: Soil Lab Sample ID: 1030770018  
% Solids: 69.6 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	3020			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	223.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	5150			P
7439-92-1	Lead				
7439-95-4	Magnesium	1090			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	307.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	23.0	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35LO

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35H7

Matrix: Soil

Lab Sample ID: 1030770018

% Solids: 69.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.7		N	MS
7440-38-2	Arsenic	45.6		NE	MS
7440-39-3	Barium	264.		N	MS
7440-41-7	Beryllium	1.3		E	MS
7440-43-9	Cadmium	6.0		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.2			MS
7440-48-4	Cobalt	15.3		*	MS
7440-50-8	Copper	424.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	2030		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	7960		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	7.7		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.66	J		MS
7440-22-4	Silver	11.8		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.77			MS
7440-62-2	Vanadium	27.8			MS
7440-66-6	Zinc	614.		*E	MS
57-12-5	Cyanide				

**Color Before:** BROWN      **Clarity Before:**      **Texture:** MEDIUM

Clarity Before: **Texture: MEDIUM**

Texture: MEDIUM

Color After: TAN Clarity After: CLEAR Artifacts:

Clarity After: CLEAR Artifacts:

#### Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35L1

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770019  
 % Solids: 58.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11500			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1280			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	27100			P
7439-92-1	Lead				
7439-95-4	Magnesium	5670			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1210			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	44.3	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

J + n  
88 855 U  
2/18/u

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35L1

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770019  
 % Solids: 58.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.71	J	N	MS
7440-38-2	Arsenic	49.4		NE	MS
7440-39-3	Barium	205.		N	MS
7440-41-7	Beryllium	1.3		E	MS
7440-43-9	Cadmium	7.0		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.2			MS
7440-48-4	Cobalt	15.8		*	MS
7440-50-8	Copper	294.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	754.		*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	11500		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	7.8		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.59	J		MS
7440-22-4	Silver	4.0		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.88			MS
7440-62-2	Vanadium	38.0			MS
7440-66-6	Zinc	899.		D*E	MS
57-12-5	Cyanide				

1.7U ✓  
 J+ ✓  
 J+ ✓  
 J+ ✓  
 J ✓  
 I ✓ 3/18/14  
 J+ ✓  
 J ✓  
 J ✓  
 J ✓  
 4.3U ✓  
 J ✓  
 I ✓ 3/18/14  
 J ✓  
 2/18/14

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: TAN Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN

EPA SAMPLE NO.

MH35L2

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
Matrix: Soil Lab Sample ID: 1030770020  
% Solids: 83.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15700			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1990			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	71200		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	11500			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	642.			P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	16.7	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ ~~st~~  
600 UJ<sup>1</sup>  
2/18/

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35L2

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770020  
 % Solids: 83.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.34	J	N	MS
7440-38-2	Arsenic	31.5		NE	MS
7440-39-3	Barium	94.2		N	MS
7440-41-7	Beryllium	1.4		E	MS
7440-43-9	Cadmium	10.4		E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.0			MS
7440-48-4	Cobalt	20.5		*	MS
7440-50-8	Copper	1240		D*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1480		D*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	6600		D	MS
7439-97-6	Mercury				
7440-02-0	Nickel	11.7		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.59	J		MS
7440-22-4	Silver	1.2		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.44	J		MS
7440-62-2	Vanadium	40.9			MS
7440-66-6	Zinc	1500		D*E	MS
57-12-5	Cyanide				

1.2 U ✓  
 J+ ✓  
 J+ ✓  
 J+ ✓  
 J+ ✓  
 J ✓  
 KA  
 3 hole(s)  
 J+ ✓  
 J+ ✓  
 J ✓  
 J ✓  
 J ✓  
 J ✓  
 J ✓  
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 J ✓  
 J ✓  
 J ✓  
 J ✓  
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 J ✓  
 J ✓  
 2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: COARSE

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35L3

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770021  
 % Solids: 16.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	986.			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	279.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	273000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	486.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	773.	J		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	48.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

2980 U <sup>m</sup>

2980 U <sup>T</sup>

2980 U <sup>m</sup>

2980 U J <sup>m</sup>

2/18/u

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35L3

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35H7  
 Matrix: Soil Lab Sample ID: 1030770021  
 % Solids: 16.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	23.3		N	MS
7440-38-2	Arsenic	969.		NE	MS
7440-39-3	Barium	37.1		N	MS
7440-41-7	Beryllium	0.11	J	E	MS
7440-43-9	Cadmium	2.8	J	E	MS
7440-70-2	Calcium				
7440-47-3	Chromium	11.3			MS
7440-48-4	Cobalt	1.4	J	*	MS
7440-50-8	Copper	235.		*NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1100		*	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	304.			MS
7439-97-6	Mercury				
7440-02-0	Nickel	1.6	J	E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	4.2	J		MS
7440-22-4	Silver	13.2		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.19	J		MS
7440-62-2	Vanadium	57.1			MS
7440-66-6	Zinc	524.		*E	MS
57-12-5	Cyanide				

J <sup>#</sup>  
 JT <sup>#</sup>  
 JT <sup>#</sup>  
 3.0 UJ <sup>#</sup>  
 3.0 UJ <sup>#</sup>  
 3.0 UJ <sup>#</sup>  
 3.0 UJ <sup>#</sup>  
 JT <sup>#</sup>  
 JT <sup>#</sup>  
 J <sup>#</sup>  
 3.0 UJ <sup>#</sup>  
 15 U <sup>#</sup>  
 JT <sup>#</sup>  
 JT <sup>#</sup>  
 JT <sup>#</sup>  
 KA  
 3.0 UJ <sup>#</sup>  
 JT <sup>#</sup>  
 2/18/11

Color Before: RED Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

**REGION VIII**  
**DATA VALIDATION REPORT**  
**INORGANIC**

Case/TDD No.	Site Name	Operable Unit	
40755 / 1008-16	Upper Animas Mining District		
RPM/OSC Name			
Sabrina Forrest			
Contractor Laboratory	Contract No.	SDG No.	Laboratory DPO/Region
ALS Laboratory Group	EPW05026	MH35E5	

Review Assigned Date: December 15, 2010 Data Validator: Fred Luck  
Review Completion Date: February 18, 2011 Report Reviewer: Lesley Boyd

Sample ID	Matrix	Analysis
MH35E5	Sediment	CLP -Metals
MH35E6		
MH35E7		
MH35E8		
MH35E9		
MH35F0		
MH35F1		
MH35F2		
MH35F3		
MH35F4		
MH35F5		
MH35F6		
MH35F7		

Sample ID	Matrix	Analysis
MH35F8	Sediment	CLP -Metals
MH35F9		
MH35G0		
MH35G1		
MH35G2		
MH35G3		
MH35G4		

## DATA QUALITY STATEMENT

- Data are ACCEPTABLE according to EPA Functional guidelines with no qualifiers (flags) added by the reviewer.
- Data are UNACCEPTABLE according to EPA Functional Guidelines.
- Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X If yes, list the items that require attention:

**INORGANIC DATA VALIDATION REPORT****REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review," January 2010.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-15% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, Case No. 40755, SDG No. MH35E5, consisted of twenty sediment samples for metals by ICP-AES and ICP-MS (ISM01.2). The following table lists the data qualifiers added to the sample analyses. Please see Data Qualifier Definitions, attached to the end of this report.

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
All Samples	Antimony	U	Blank Contamination	3
MH35E5, MH35E6, MH35F0, MH35F1, MH35F2, MH35F3, MH35F4, MH35F5, MH35F6, MH35F7, MH35F9, MH35G1, MH35G2, MH35G3, MH35G4	Beryllium			
MH35E5, MH35E6, MH35F0, MH35F3, MH35F4, MH35F6, MH35F7, MH35G0, MH35G1, MH35G2	Cadmium			
MH35F3, MH35F5, MH35G1	Calcium			
MH35F8	Chromium			
MH35F8	Magnesium			
MH35E9, MH35F0, MH35F8, MH35G1, MH35G3	Potassium			
MH35E9, MH35F8	Silver			
All Samples	Sodium			
MH35E5, MH35E6, MH35E7, MH35E8, MH35E9, MH35F0, MH35F1, MH35F2, MH35F3, MH35F4, MH35F5, MH35F6, MH35F8, MH35F9, MH35G1, MH35G3	Thallium			

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
MH35E7, MH35E8, MH35E9, MH35F8, MH35G0	Beryllium	J+	Potentially false positive detection in ICS check sample	4
MH35E5, MH35E6, MH35E7, MH35E8, MH35F1, MH35F2, MH35F3, MH35F4, MH35F5, MH35F6, MH35F7, MH35F9, MH35G0, MH35G2, MH35G4	Potassium			
MH35E5, MH35E6, MH35E7, MH35E8, MH35F0, MH35F1, MH35F2, MH35F3, MH35F4, MH35F5, MH35F6, MH35F7, MH35F9, MH35G0, MH35G1, MH35G2, MH35G3, MH35G4	Silver			
MH35F7, MH35G0, MH35G2, MH35G4	Thallium			
All Samples	Barium, Zinc	J/UJ	Original & Duplicate both >5x the CRQL and RPD > 20%	6
	Cadmium		Original and/or Duplicate < 5x the CRQL and absolute difference > CRQL	
	Antimony, Selenium, Silver		MS 30 - 74%R, Post Digestion Spike %R ≥ 75%	
	Copper		MS <30%R, Post Digestion Spike %R ≥ 75%	
	Arsenic, Beryllium, Cadmium, Cobalt, Copper, Nickel, Potassium, Sodium, Zinc	J	MS > 125%R, Post Digestion Spike %R ≤ 125%	7
			Serial Dilution %D > 10%	8

## 1. PRESERVATION AND HOLDING TIMES

All technical holding times and preservation criteria were met.

Yes        No X

Comments: The samples were analyzed within 180 days for the ICP metals. According to the Sample Log-In Sheet and case narrative, the two sample coolers were each received at a temperature of 7°C, which is outside the recommended temperature range of 4 ± 2°C. The Sample Log-In Sheet further indicates that neither cooler contained a Cooler Temperature Indicator Bottle, as indicated on the form to be required. There is also no indication that SMO was contacted regarding this issue, neither is any documentation of the resolution or indication of how the cooler temperature was derived provided. The TR/COC also did not designate a sample for laboratory QC, but the documentation of the resolution of this issue is provided in the SDG.

When the sample preservation criteria are not met, but the sample analysis and extraction are within the technical holding times then professional judgment is used whether to qualify the data. No action was taken since the preservation exceedence was minimal and the extraction and holding times were well within the established parameters.

The sampler did not designate a specific sample on the TR/COC for Laboratory QC; in accordance with reported previous Region 8 direction, the laboratory did select a sample (MH35G4) for laboratory QC. The reviewer has not been provided any information regarding PE, field blank, or rinsate samples; therefore cannot evaluate whether the selected sample was a PE, field blank, or rinsate sample.

No other shipping or receiving problems were noted. Chain-of-custody, summary forms, and raw data were evaluated.

## 2. INSTRUMENT CALIBRATIONS: INITIAL AND CONTINUING CALIBRATION VERIFICATION (ICV AND CCV)

The initial and continuing calibration verification standards (ICV and CCV, respectively) met SOW requirements.

Yes X No       

Comments: None.

The calibration verification results were within 90-110% recovery for metals, 85-115% for cyanide, and 80-120% for mercury.

Yes X No       

Comments: None.

The continuing calibration standards were run at 10% frequency or every two hours.

Yes X No \_\_\_\_\_

Comments: None.

### 3. BLANKS

The initial and continuing calibration blanks (ICB and CCB, respectively) met SOW requirements.

Yes X No \_\_\_\_\_

Comments: For the ICP-AES analyses, the ICB was rerun.

The continuing calibration blanks were run at 10% frequency.

Yes X No \_\_\_\_\_

Comments: Continuing calibration blanks were run every 10 samples.

A laboratory/preparation blank was run at the frequency of one per twenty samples, or per sample delivery group (whichever is more frequent), and for each matrix analyzed.

Yes X No \_\_\_\_\_

Comments: None.

All analyzed blanks were free of contamination.

Yes \_\_\_\_\_ No X

Comments: The following table lists the blanks with contamination that resulted in sample qualification, elements present, affected samples, and data qualifiers:

## Blank Contaminants

Blank ID	Contaminant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
PB	Antimony	1	0.0097	0.013	MH35E5 MH35E6 MH35E7 MH35E8 MH35E9 MH35F0 MH35F1 MH35F2 MH35F3 MH35F4 MH35F5 MH35F6 MH35F7 MH35F8 MH35F9 MH35G0 MH35G1 MH35G2 MH35G3 MH35G4	1.3 0.68 0.22 0.98 0.79 0.44 1.1 0.56 0.87 0.88 1.2 0.38 0.58 0.94 0.41 0.42 1.4 0.44 0.59 0.33	2.1 U 1.4 U 1.3 U 1.6 U 1.3 U 1.7 U 1.6 U 1.4 U 1.6 U 1.4 U 1.3 U 1.5 U 1.9 U 2.5 U 1.3 U 1.4 U 3.8 U 1.6 U 1.3 U 1.6 U
PB	Beryllium	0.5	0.0032	0.011	MH35E5 MH35E6 MH35F0 MH35F1 MH35F2 MH35F3 MH35F4 MH35F5 MH35F6 MH35F7 MH35F9 MH35G1 MH35G2 MH35G3 MH35G4	0.44 0.33 0.66 0.39 0.38 0.41 0.38 0.41 0.41 0.57 0.46 0.29 0.47 0.46 0.56	1.0 U 0.72 U 0.87 U 0.78 U 0.68 U 0.82 U 0.71 U 0.64 U 0.74 U 0.93 U 0.66 U 1.9 U 0.78 U 0.64 U 0.81 U
PB	Cadmium	0.5	0.0027	0.500	MH35E5 MH35E6 MH35F0 MH35F3 MH35F4 MH35F6 MH35F7 MH35G0 MH35G1 MH35G2	0.74 0.66 0.78 0.52 0.47 0.51 0.79 0.35 0.45 0.44	1.0 U 0.72 U 0.87 U 0.82 U 0.71 U 0.74 U 0.93 U 0.68 U 1.9 U 0.78 U
PB	Calcium	500	1.7	4.404	MH35F3 MH35F5 MH35G1	791 230 1150	822 U 644 U 1900 U
PB	Chromium	1	0.026	1.000	MH35F8	1.6	2.5 U
PB	Magnesium	500	1.2	500	MH35F8	447	1240 U

Blank ID	Contaminant	CRQL (mg/Kg)	MDL (mg/Kg)	Concentration Found in Blank (mg/Kg)	Associated Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
PB	Potassium	500	5.8	55.883	MH35E9 MH35F0 MH35F8 MH35G1 MH35G3	375 842 209 1160 510	674 U 865 U 1240 U 1900 U 636 U
PB	Silver	0.5	0.0023	0.010	MH35E9 MH35F8	0.48 0.22	0.67 U 1.2 U
PB	Sodium	500	0.73	18.271	MH35E5 MH35E6 MH35E7 MH35E8 MH35E9 MH35F0 MH35F1 MH35F2 MH35F3 MH35F4 MH35F5 MH35F6 MH35F7 MH35F8 MH35F9 MH35G0 MH35G1 MH35G2 MH35G3 MH35G4	117 60.2 49.7 92.9 180 58.1 88.1 75.6 76.1 68.7 69.8 90.6 109 32.3 62.4 56.6 77.5 100 25.2 94.7	1040 U 723 U 641 U 814 U 674 U 865 U 781 U 676U 822 U 714 U 644 U 741 U 926 U 1240 U 657 U 684 U 1900 U 782 U 636 U 813 U
PB	Thallium	0.5	0.0015	0.007	MH35E5 MH35E6 MH35E7 MH35E8 MH35E9 MH35F0 MH35F1 MH35F2 MH35F3 MH35F4 MH35F5 MH35F6 MH35F8 MH35F9 MH35G1 MH35G3	0.72 0.41 0.32 0.45 0.19 0.31 0.62 0.41 0.75 0.69 0.59 0.44 0.26 0.36 0.43 0.42	1.0 U 0.72 U 0.64 U 0.81 U 0.67 U 0.87 U 0.78 U 0.68 U 0.82 U 0.71 U 0.64 U 0.74 U 1.2 U 0.66 U 1.9 U 0.64 U

**4. INDUCTIVELY COUPLED PLASMA - INTERFERENCE CHECK SAMPLE (ICP-ICS)**

The ICP interference check sample (ICS) was run at the beginning and end of each sample analysis run and every 20 analytical samples, but not prior to the ICV.

Yes X      No \_\_\_\_\_

Comments:      None.

Percent recovery of the analytes in the ICS solutions were within the range of 80-120% or the result was within  $\pm$  the CRQL.

Yes X      No \_\_\_\_\_

Comments:      None.

Sample results for aluminum, calcium, iron, and magnesium were less than the ICSA values or no interference was noted.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

Sample results contain potential false positives and false negatives.

Yes X      No \_\_\_\_\_

Comments:      The following table lists the elements with potential false positives or false negatives that resulted in sample qualification, affected samples, and data qualifiers:

## ICP Interferences

Element	Concentration Found in ICSA Sample (ug/L)	Affected Samples	Concentration Found in Sample (mg/Kg)	Qualifier/Adjustment
Beryllium	0.37	MH35E7 MH35E8 MH35E9 MH35F8 MH35G0	>MDL	J+
Potassium	1020	MH35E5 MH35E6 MH35E7 MH35E8 MH35F1 MH35F2 MH35F3 MH35F4 MH35F5 MH35F6 MH35F7 MH35F9 MH35G0 MH35G2 MH35G4		
Silver	0.015	MH35E5 MH35E6 MH35E7 MH35E8 MH35F0 MH35F1 MH35F2 MH35F3 MH35F4 MH35F5 MH35F6 MH35F7 MH35F9 MH35G0 MH35G1 MH35G2 MH35G3 MH35G4		
Thallium	0.056	MH35F7 MH35G0 MH35G2 MH35G4		

## 5. LABORATORY CONTROL SAMPLE

The laboratory control sample (LCS) was prepared and analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_

Comments:      None.

All results were within control limits OF 70-130%.

Yes X      No \_\_\_\_\_

Comments:      None.

## 6. FORM 6 & 12 - DUPLICATE SAMPLE ANALYSIS

Duplicate sample analysis was performed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

The RPDs were calculated correctly.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

For sample concentrations greater than five times the CRQL, RPDs were within  $\pm 20\%$  (limits of  $\pm 35\%$  apply for soil/sediments/tailings samples).

Yes \_\_\_\_\_      No X      NA \_\_\_\_\_

Comments:      The following table lists the duplicate results outside control limits, samples affected, and data qualifiers:

Element	RPD	QC Limit	Samples Affected	Qualifiers
Barium	57%	20%	All samples	J / UJ
Zinc	75%			

For sample concentrations less than five times the CRQL, duplicate analysis results were within the control window of CRQL (absolute difference < CRQL for soils).

Yes         No  X        NA   

Comments: The following table lists the duplicate results outside control limits, samples affected, and data qualifiers:

Element	Sample / Duplicate Result (mg / Kg)	% RPD	5x CRQL (mg / Kg)	Samples Affected	Qualifiers
Cadmium	2.73 / 1.13	83 %	2.5	All samples	J / UJ

## 7. SPIKE SAMPLE ANALYSIS

A matrix spike sample was analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes  X        No         NA   

Comments: None.

The percent recoveries (%Rs) were calculated correctly.

Yes  X        No         NA   

Comments: None.

Spike recoveries were within the range of 75-125% (an exception is granted where the sample concentration is four times the spike concentration).

Yes         No  X  

Comments: The following table lists the spike recoveries outside control limits, post digestion spike recoveries, samples affected, and data qualifiers:

Element	Matrix Spike %R	Post-Digestion %R	Samples Affected	Qualifiers
Antimony	13%	168%	All samples	J/UJ
Cadmium	61%	83%		J
Copper	182%	77%		
Selenium	6%	114%		J/UJ
Silver	1%	87%		

A post-digest spike was performed for those elements that did not meet the specified criteria (i.e., Pre-digestion/pre-distillation spike recovery falls outside of control limits and sample result is less than four times the spike amount added, exception: Ag, Hg).

Yes X      No \_\_\_\_\_

Comments:      None.

#### 8. ICP SERIAL DILUTION

A serial dilution was performed for ICP analysis with every twenty or fewer samples of a similar matrix, or one per sample delivery group, whichever is more frequent.

Yes X      No \_\_\_\_\_

Comments:      None.

The serial dilution was without interference problems as defined by the SOW.

Yes \_\_\_\_\_ No X

Comments:      The following serial dilution %Ds were greater than 10% and the original sample result was at least 50\* the MDL:

Element	% Difference	Samples Affected	Qualifiers
Arsenic	30%	All samples	J
Beryllium	14%		
Cadmium	11%		
Cobalt	13%		
Copper	18%		
Nickel	15%		
Potassium	19%		
Sodium	30%		
Zinc	30%		

#### 9. REGIONAL QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

Regional QA/QC was conducted as initiated by the EPA Region 8.

Yes    No    NA X

Comments: The SDG shows no indication of EPA Region 8 initiating any additional QA / QC.

#### 10. FORM 10 - INTERELEMENT CORRECTION FACTORS FOR ICP

Interelement corrections for ICP were reported.

Yes X      No   

Comments: None.

#### 11. FORM 12 - PREPARATION LOG

Information on the preparation of samples for analysis was reported on Form 12.

Yes X      No   

Comments: None.

#### 12. FORM 13 - ANALYSIS RUN LOG

A Form 13 with the required information was filled out for each analysis run in the data package.

Yes X      No   

Comments: None.

**13. Additional Comments or Problems/Resolutions Not Addressed Above**

Page 1 of the Evidence Audit Checklist (EAC) indicates three airbills are associated with this SDG, however documentation is only provided for Airbill Number 3430, which documents the shipment of four packages. The laboratory only documented receipt of two coolers, so it is unclear as to what the other two packages were that were included on the airbill.

**INORGANIC DATA QUALITY ASSURANCE REVIEW****Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality. Use of additional qualifiers should be carefully considered. Definitions for all qualifiers used should be provided with each report.

**GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA**

- R - Reported value is "rejected." The data are unusable. Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity and is the approximate concentration of the analyte in the sample.
- J+ - The associated numerical value is an estimated quantity but the result may be biased high.
- J- - The associated numerical value is an estimated quantity but the result may be biased low.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound may or may not be present in the sample.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.)  
ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

## ACRONYMS

AA	Atomic Absorption
Ag	Silver
CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CRA	CRQL standard required for AA
CRQL	Contract Required Quantitation Limit
CRI	CRQL standard required for ICP
CV	Cold Vapor
EPA	U.S. Environmental Protection Agency
GFAA	Graphite Furnace Atomic Absorption
Hg	Mercury
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICSA	Interference Check Sample (Solution A)
ICSAB	Interference Check Sample (Solution AB)
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
LRA	Linear Range Verification Analysis
MDL	Method Detection Limit
PDS	Post Digestion Spike
QC	Quality Control
RPD	Relative Percent Difference
RPM	Regional Project Manager
RSD	Percent Relative Standard Deviation
SA	Spike Added
SAS	Special Analytical Services
SDG	Sample Delivery Group
SOW	Statement of Work
SR	Sample Result
SSR	Spiked Sample Result

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E5

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768001  
 % Solids: 48.3 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6860			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1100			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	78100			P
7439-92-1	Lead				
7439-95-4	Magnesium	3030			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1700		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	117.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+  
1040 U/K  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E5

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768001

% Solids: 48.3

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.3	J	N	MS
7440-38-2	Arsenic	45.3		E	MS
7440-39-3	Barium	559.		*	MS
7440-41-7	Beryllium	0.44	J	E	MS
7440-43-9	Cadmium	0.74	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.6		*	MS
7440-48-4	Cobalt	3.9		E	MS
7440-50-8	Copper	48.7		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	459.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	333.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.4		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.6	J	N	MS
7440-22-4	Silver	4.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.72	J		MS
7440-62-2	Vanadium	49.7		*	MS
7440-66-6	Zinc	205.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: WHITE Clarity After: CLOUDY Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E6

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768002  
 % Solids: 69.2 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7030			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1010			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	68800			P
7439-92-1	Lead				
7439-95-4	Magnesium	4080			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	889.		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	60.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + N  
72301  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35E6

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

**Matrix:** Soil

Lab Sample ID: 1030768002

% Solids: 69.2

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.68	J	N	MS
7440-38-2	Arsenic	34.1		E	MS
7440-39-3	Barium	210.		*	MS
7440-41-7	Beryllium	0.33	J	E	MS
7440-43-9	Cadmium	0.66	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.4		*	MS
7440-48-4	Cobalt	4.3		E	MS
7440-50-8	Copper	53.0		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	322.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	506.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.0		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.81	J	N	MS
7440-22-4	Silver	2.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.41	J		MS
7440-62-2	Vanadium	44.8		*	MS
7440-66-6	Zinc	199.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: ... Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768003  
 % Solids: 78.0 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8570			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2560			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	20800			P
7439-92-1	Lead				
7439-95-4	Magnesium	5610			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	745.	E		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	49.7	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ M  
641 UTH  
2/18/11

Color Before: BROWN Clarity Before: .. Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E7

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768003

% Solids: 78.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.22	J	N	MS
7440-38-2	Arsenic	5.9		E	MS
7440-39-3	Barium	108.		*	MS
7440-41-7	Beryllium	1.0		E	MS
7440-43-9	Cadmium	5.8		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.5		*	MS
7440-48-4	Cobalt	10.9		E	MS
7440-50-8	Copper	119.		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	612.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	6750		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	8.2		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.099	J	N	MS
7440-22-4	Silver	1.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.32	J		MS
7440-62-2	Vanadium	30.6		*	MS
7440-66-6	Zinc	1470		D*E	MS
57-12-5	Cyanide				

Color Before: BLACK Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E8

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768004  
 % Solids: 61.4 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12300			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2010			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	58100			P
7439-92-1	Lead				
7439-95-4	Magnesium	4270			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1260		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	92.9	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ 71  
814 01/11  
2/18/11

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E8

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768004

% Solids: 61.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.98	J	N	MS
7440-38-2	Arsenic	27.3		E	MS
7440-39-3	Barium	261.		*	MS
7440-41-7	Beryllium	0.89		E	MS
7440-43-9	Cadmium	2.0		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	5.6		*	MS
7440-48-4	Cobalt	12.3		E	MS
7440-50-8	Copper	167.		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	734.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	2710		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.2		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.52	J	N	MS
7440-22-4	Silver	2.8		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.45	J		MS
7440-62-2	Vanadium	41.1		*	MS
7440-66-6	Zinc	447.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: TAN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E9

Lab Name: <u>ALS Laboratory Group</u>	Contract: <u>EPW09036</u>		
Lab Code: <u>DATAAC</u>	Case No.: <u>40755</u>	Mod. Ref. No.: _____	SDG No.: <u>MH35E5</u>
Matrix: <u>Soil</u>	Lab Sample ID: <u>1030768005</u>		
% Solids: <u>74.2</u>	Date Received: <u>11/03/2010</u>		

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8000			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2050			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	26000			P
7439-92-1	Lead				
7439-95-4	Magnesium	3730			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	375.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	180.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

674 U 8L  
674 U M  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35E9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768005

% Solids: 74.2

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.79	J	N	MS
7440-38-2	Arsenic	14.2		DE	MS
7440-39-3	Barium	79.3		*	MS
7440-41-7	Beryllium	0.75		E	MS
7440-43-9	Cadmium	0.97		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.9		D*	MS
7440-48-4	Cobalt	11.0		DE	MS
7440-50-8	Copper	201.		DNE	MS
7439-89-6	Iron				
7439-92-1	Lead	187.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1160		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	5.9		DE	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.45	J	DN	MS
7440-22-4	Silver	0.48	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.19	J		MS
7440-62-2	Vanadium	36.1		D*	MS
7440-66-6	Zinc	289.		D*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F0

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768006  
 % Solids: 57.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11600			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1810			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	44300			P
7439-92-1	Lead				
7439-95-4	Magnesium	6090			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	842.	E		P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	58.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

865 U *HC*

865 U *R*  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F0

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768006

% Solids: 57.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.44	J	N	MS
7440-38-2	Arsenic	13.3		E	MS
7440-39-3	Barium	123.		*	MS
7440-41-7	Beryllium	0.66	J	E	MS
7440-43-9	Cadmium	0.78	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.7		*	MS
7440-48-4	Cobalt	5.4		E	MS
7440-50-8	Copper	91.4		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	366.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1440		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.9		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.51	J	N	MS
7440-22-4	Silver	1.2		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.31	J		MS
7440-62-2	Vanadium	25.8		*	MS
7440-66-6	Zinc	241.		*E	MS
57-12-5	Cyanide				

1.7 UJ M  
 J M  
 J M  
 0.87 U K  
 0.87 U K  
 J MSA 3/9/11  
 J M  
 J M  
 J MSA 3/9/11  
 J M  
 J M  
 J MSA 3/9/11  
 J M  
 4.3 U K J R  
 J +  
 0.87 U K  
 J MSA 3/9/11  
 J M  
 2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768007

% Solids: 64.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5900			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	934.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	71700		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	2440			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1300		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	88.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + *74*  
781 U *32*  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35F1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768007

% Solids: 64.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

Color Before: ORANGE Clarity Before: Texture: MEDIUM

Clarity Before: **Texture: MEDIUM**

Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Clarity After: CLEAR Artifacts:

## Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F2

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768008  
 % Solids: 74.0 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7040			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1040			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	62200		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	3760			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1090		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	75.6	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+ N  
676 U N  
4/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F2

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768008

% Solids: 74.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.56	J	N	MS
7440-38-2	Arsenic	35.3		E	MS
7440-39-3	Barium	342.		*	MS
7440-41-7	Beryllium	0.38	J	E	MS
7440-43-9	Cadmium	1.4		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	5.7		*	MS
7440-48-4	Cobalt	4.8		E	MS
7440-50-8	Copper	98.6		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	306.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	580.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.4		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.0	J	N	MS
7440-22-4	Silver	1.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.41	J		MS
7440-62-2	Vanadium	42.3		*	MS
7440-66-6	Zinc	360.		*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F3

Lab Name: ALS Laboratory Group Contract: EPW09036  
Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
Matrix: Soil Lab Sample ID: 1030768009  
% Solids: 60.8 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4890			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	791.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	88900		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	2180			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1200		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	76.1	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

822 v <sup>m</sup>

J + H

822 U M  
2/18/11

Color Before: BROWN Clarity Before: :: Texture: MEDIUM

**Color After:** YELLOW      **Clarity After:** CLEAR      **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F3

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768009

% Solids: 60.8

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.87	J	N	MS
7440-38-2	Arsenic	57.0		E	MS
7440-39-3	Barium	317.		*	MS
7440-41-7	Beryllium	0.41	J	E	MS
7440-43-9	Cadmium	0.52	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.8		*	MS
7440-48-4	Cobalt	3.6		E	MS
7440-50-8	Copper	41.8		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	541.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	436.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.2		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.4	J	N	MS
7440-22-4	Silver	2.1		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.75	J		MS
7440-62-2	Vanadium	48.6		*	MS
7440-66-6	Zinc	153.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: cl Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F4

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768010

% Solids: 70.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5540			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	735.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	56500			P
7439-92-1	Lead				
7439-95-4	Magnesium	2810			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	127.0		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	68.7	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + K  
714 U M  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F4

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768010

% Solids: 70.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.88	J	N	MS
7440-38-2	Arsenic	34.0		E	MS
7440-39-3	Barium	422.		*	MS
7440-41-7	Beryllium	0.38	J	E	MS
7440-43-9	Cadmium	0.47	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	5.9		*	MS
7440-48-4	Cobalt	3.1		E	MS
7440-50-8	Copper	29.8		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	361.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	311.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.8		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.3	J	N	MS
7440-22-4	Silver	1.9		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.69	J		MS
7440-62-2	Vanadium	34.6		*	MS
7440-66-6	Zinc	136.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F5

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768011  
 % Solids: 77.7 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5240			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	230.	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	44400			P
7439-92-1	Lead				
7439-95-4	Magnesium	2570			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1230		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	69.8	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

644 U 72

J+ 7

644 U 71

2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F5

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768011

% Solids: 77.7

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.2	J	N	MS
7440-38-2	Arsenic	54.8		E	MS
7440-39-3	Barium	582.		*	MS
7440-41-7	Beryllium	0.41	J	E	MS
7440-43-9	Cadmium	2.6		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	4.5		*	MS
7440-48-4	Cobalt	4.0		E	MS
7440-50-8	Copper	40.4		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	598.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	304.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.0	J	N	MS
7440-22-4	Silver	3.6		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.59	J		MS
7440-62-2	Vanadium	36.4		*	MS
7440-66-6	Zinc	604.		*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: WHITE Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F6

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768012  
 % Solids: 67.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8220			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1040			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	94600		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	4550			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1060		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	80.6	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J+  
74103  
2/18/14

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F6

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768012

% Solids: 67.5

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.38	J	N	MS
7440-38-2	Arsenic	34.3		E	MS
7440-39-3	Barium	121.		*	MS
7440-41-7	Beryllium	0.41	J	E	MS
7440-43-9	Cadmium	0.51	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.6		*	MS
7440-48-4	Cobalt	5.5		E	MS
7440-50-8	Copper	55.2		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	334.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	831.		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.9		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.81	J	N	MS
7440-22-4	Silver	1.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.44	J		MS
7440-62-2	Vanadium	49.9		*	MS
7440-66-6	Zinc	186.		*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F7

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768013  
 % Solids: 54.0 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5710			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1040			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	123000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	2360			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1410		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	109.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + m  
926 U 2  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F7

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768013

% Solids: 54.0

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.58	J	N	MS
7440-38-2	Arsenic	37.2		E	MS
7440-39-3	Barium	258.		*	MS
7440-41-7	Beryllium	0.57	J	E	MS
7440-43-9	Cadmium	0.79	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	8.4		*	MS
7440-48-4	Cobalt	4.4		E	MS
7440-50-8	Copper	59.7		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	417.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	636.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.6		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.1	J	N	MS
7440-22-4	Silver	2.2		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.99			MS
7440-62-2	Vanadium	71.7		*	MS
7440-66-6	Zinc	225.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F8

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768014

% Solids: 40.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5060			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	4130			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	860000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	447.	J		P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	209.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	32.3	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1240 U 72

1240 U 25

1240 0<sup>m</sup>  
31.844

Color: Before: BROWN Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F8

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768014

% Solids: 40.4

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.94	J	N	MS
7440-38-2	Arsenic	103.		E	MS
7440-39-3	Barium	36.3		*	MS
7440-41-7	Beryllium	10.3		E	MS
7440-43-9	Cadmium	4.1		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	1.6	J	*	MS
7440-48-4	Cobalt	17.0		E	MS
7440-50-8	Copper	110.		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	255.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	2410		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.21	J	N	MS
7440-22-4	Silver	0.22	J	N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.26	J		MS
7440-62-2	Vanadium	13.4		*	MS
7440-66-6	Zinc	2470		D*E	MS
57-12-5	Cyanide				

Color Before: RED Clarity Before: CLEAR Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F9

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768015  
 % Solids: 76.1 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8860			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	2020			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	67200		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	5080			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	933.		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	62.4	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + H  
6570 H  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35F9

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768015

% Solids: 76.1

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.41	J	N	MS
7440-38-2	Arsenic	34.0		E	MS
7440-39-3	Barium	191.		*	MS
7440-41-7	Beryllium	0.46	J	E	MS
7440-43-9	Cadmium	2.0		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.0		*	MS
7440-48-4	Cobalt	5.5		E	MS
7440-50-8	Copper	76.4		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	361.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	804.		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	3.6		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.1	J	N	MS
7440-22-4	Silver	1.4		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.36	J		MS
7440-62-2	Vanadium	45.2		*	MS
7440-66-6	Zinc	478.		*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G0

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768016  
 % Solids: 73.1 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10400			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1350			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	37000			P
7439-92-1	Lead				
7439-95-4	Magnesium	3850			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1310		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	56.6	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + 8  
6840 74  
2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM  
 Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G0

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768016

% Solids: 73.1

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.42	J	N	MS
7440-38-2	Arsenic	46.9		DE	MS
7440-39-3	Barium	314.		*	MS
7440-41-7	Beryllium	0.96	J	DE	MS
7440-43-9	Cadmium	0.35	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.8		D*	MS
7440-48-4	Cobalt	14.8		DE	MS
7440-50-8	Copper	77.1		DNE	MS
7439-89-6	Iron				
7439-92-1	Lead	342.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1560		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	7.5		DE	MS
7440-09-7	Potassium				
7782-49-2	Selenium	1.1	J	DN	MS
7440-22-4	Silver	1.5		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.75			MS
7440-62-2	Vanadium	48.6		D*	MS
7440-66-6	Zinc	144.		D*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: S Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAc Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768017

% Solids: 26.3

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5070			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1150	J		P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	341000		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	21-30			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1160	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	77.5	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

1900 U *ST*

1900 U *ST*

1900 U *ST*

2/18/11

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G1

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768017

% Solids: 26.3

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	1.4	J	N	MS
7440-38-2	Arsenic	115.		E	MS
7440-39-3	Barium	80.6		*	MS
7440-41-7	Beryllium	0.29	J	E	MS
7440-43-9	Cadmium	0.45	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.2		*	MS
7440-48-4	Cobalt	2.1		E	MS
7440-50-8	Copper	112.		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	1700			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	540.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.3		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.63	J	N	MS
7440-22-4	Silver	4.1		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.43	J		MS
7440-62-2	Vanadium	96.9		*	MS
7440-66-6	Zinc	177.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G2

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.:  SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768018  
 % Solids: 63.9 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6160			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	867.			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	57100			P
7439-92-1	Lead				
7439-95-4	Magnesium	2360			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1350		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	100.	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

J + 24

782 U 24  
2/18/1

Color Before: BROWN Clarity Before:  Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G2

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATAAC Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

Matrix: Soil

Lab Sample ID: 1030768018

% Solids: 63.9

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.44	J	N	MS
7440-38-2	Arsenic	24.3		E	MS
7440-39-3	Barium	226.		*	MS
7440-41-7	Beryllium	0.47	J	E	MS
7440-43-9	Cadmium	0.44	J	*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	6.9		*	MS
7440-48-4	Cobalt	2.9		E	MS
7440-50-8	Copper	47.8		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	304.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	407.		*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	2.8		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.0	J	N	MS
7440-22-4	Silver	1.9		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.80			MS
7440-62-2	Vanadium	56.3		*	MS
7440-66-6	Zinc	131.		*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G3

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAAC Case No.: 40755 Mod. Ref. No.: SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768019  
 % Solids: 78.6 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7840			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1120			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	33000			P
7439-92-1	Lead				
7439-95-4	Magnesium	6800			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	510.	J	E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	25.2	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

636 U 74

636 U 82

2/18/11

Color Before: BROWN Clarity Before: Texture: COARSE

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1B-IN

EPA SAMPLE NO.

MH35G3

Lab Name: ALS Laboratory Group

Contract: EPW09036

Lab Code: DATA C Case No.: 40755

Mod. Ref. No.: SDG No.: MH35E5

**Matrix:** Soil

Lab Sample ID: 1030768019

% Solids: 78.6

Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.59	J	N	MS
7440-38-2	Arsenic	37.7		E	MS
7440-39-3	Barium	95.5		*	MS
7440-41-7	Beryllium	0.46	J	E	MS
7440-43-9	Cadmium	17.5		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	7.9		*	MS
7440-48-4	Cobalt	9.3		E	MS
7440-50-8	Copper	159.		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	847.		D	MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1200		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	7.1		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	0.92	J	N	MS
7440-22-4	Silver	2.9		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.42	J		MS
7440-62-2	Vanadium	65.9		*	MS
7440-66-6	Zinc	4910		D*E	MS
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: COARSE

Clarity Before: **COARSE**

Texture: COARSE

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Clarity After: CLEAR Artifacts:

#### **Artifacts:**

**Comments:**

E: The reported value is estimated due to the presence of interference.

USEPA - CLP  
1A-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAc Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768020  
 % Solids: 61.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6640			P
7440-36-0	Antimony				
7440-38-2	Arsenic				
7440-39-3	Barium				
7440-41-7	Beryllium				
7440-43-9	Cadmium				
7440-70-2	Calcium	1050			P
7440-47-3	Chromium				
7440-48-4	Cobalt				
7440-50-8	Copper				
7439-89-6	Iron	81600		D	P
7439-92-1	Lead				
7439-95-4	Magnesium	3090			P
7439-96-5	Manganese				
7439-97-6	Mercury				
7440-02-0	Nickel				
7440-09-7	Potassium	1230		E	P
7782-49-2	Selenium				
7440-22-4	Silver				
7440-23-5	Sodium	94.7	J	E	P
7440-28-0	Thallium				
7440-62-2	Vanadium				
7440-66-6	Zinc				
57-12-5	Cyanide				

Color Before: BROWN Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

J + Z  
8130 Z  
Z  
2/18/11

USEPA - CLP  
1B-IN  
INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MH35G4

Lab Name: ALS Laboratory Group Contract: EPW09036  
 Lab Code: DATAC Case No.: 40755 Mod. Ref. No.: \_\_\_\_\_ SDG No.: MH35E5  
 Matrix: Soil Lab Sample ID: 1030768020  
 % Solids: 61.5 Date Received: 11/03/2010

Concentration Units (ug/L, ug or mg/kg dry weight): mg/kg

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum				
7440-36-0	Antimony	0.33	J	N	MS
7440-38-2	Arsenic	34.7		E	MS
7440-39-3	Barium	250.		*	MS
7440-41-7	Beryllium	0.56	J	E	MS
7440-43-9	Cadmium	2.7		*NE	MS
7440-70-2	Calcium				
7440-47-3	Chromium	9.9		*	MS
7440-48-4	Cobalt	6.4		E	MS
7440-50-8	Copper	60.0		NE	MS
7439-89-6	Iron				
7439-92-1	Lead	346.			MS
7439-95-4	Magnesium				
7439-96-5	Manganese	1380		D*	MS
7439-97-6	Mercury				
7440-02-0	Nickel	4.7		E	MS
7440-09-7	Potassium				
7782-49-2	Selenium	2.0	J	N	MS
7440-22-4	Silver	1.7		N	MS
7440-23-5	Sodium				
7440-28-0	Thallium	0.90			MS
7440-62-2	Vanadium	72.2		*	MS
7440-66-6	Zinc	693.		*E	MS
57-12-5	Cyanide				

Color Before: ORANGE Clarity Before: \_\_\_\_\_ Texture: MEDIUM

Color After: BROWN Clarity After: CLEAR Artifacts: \_\_\_\_\_

Comments:

E: The reported value is estimated due to the presence of interference.

**REGION VIII**  
**DATA VALIDATION REPORT**  
**INORGANIC**

Case No. / TDD No.	Site Name	Operable Unit	
C101003, C101004 / 1008-13	Upper Animas Mining District		
RPM/OSC Name			
Sabrina Forrest			
Contractor Laboratory	Contract No.	TDF No.	Laboratory DPO/Region
ESAT – TechLaw, Inc.		DG-214 water and soil	

Review Assigned Date March 28, 2011  
 Review Completion Date March 30, 2011

Data Validator Diane Short & Assoc. Review  
 Report Reviewer Kent Alexander

Sample ID	Matrix	Analysis
UASE001D	Sediment	Dissolved (water) and Total Recoverable (soil) Metals by EPA Methods 200.7 and 200.8
UASE002		
UASE003		
UASE001		
UASW001	Water	
UASW001 (should be 001D)		
UAWS002		
UASW003		

**DATA QUALITY STATEMENT**

- ( ) Data are ACCEPTABLE according to EPA Functional guidelines with no qualifiers (flags) added by the reviewer.
- ( ) Data are UNACCEPTABLE according to EPA Functional Guidelines.
- (X) Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X \_\_\_\_\_

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X \_\_\_\_\_ If yes, list the items that require attention:

**INORGANIC DATA VALIDATION REPORT****REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," (NFG) January 2010.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-20% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, TDF No. DG-214, consisted of 4 sediment samples for Total Recoverable Metals and 4 water samples for Dissolved Metals by Methods 200.7 and 200.8 by ICP. The following table lists the data qualifiers added to the sample analyses. Please see Data Qualifier Definitions, attached to the end of this report.

**Deliverables:**

Note that the laboratory forms do not contain times of analysis on the result forms nor on the QC and Calibration Forms. This is not uncommon for CLP-type forms, but it means that the raw data must be spot checked to verify the calibration associations. As there were no outliers, no further action is taken.

**Sample Tracking:**

There are Deliverable Submission Forms, but no actual laboratory log-in forms. The integrity of the samples cannot be verified. There are no courier forms or tracking identifications. Sample authentication cannot be verified. Samples were collected on 10/8/2010 and relinquished on 10/11/2010. There is no record of custody for that time period.

For the waters samples, the location ID was logged for the sample ID so the UASW001 and UASW001D distinction was not carried over into the laboratory result forms. Laboratory sample C1010004-2 should be client ID UASW001D.

No shipping or receiving problems were noted in the narrative. As the client was not notified of custody or integrity issues, no further action is taken.

**Blanks:**

There are results reported for many of the ICB and CCBs, but none are above the MDLs recorded on the result forms (the ICB/CCB forms only note the PQLs) with the exception of iron reported at 28.9 mg/kg for QC set 1010049 for ICP soils. All data are > 5 x Blank and no qualification is required.

The laboratory notes that cadmium was detected in the prep blank at < 2 x PQL. The result for cadmium is reported at 103 ug/kg. The RL for cadmium was raised from 20 ug/kg to 30 ug/kg. The client will need to determine if the elevated limits meet project criteria. All client data were > 5 x blank and no qualification is required.

There are no rinse blanks, which would be appropriate if dedicated equipment was used.

**Interference Check:**

The ICSA value for iron is 250,000 ug/l for water or 25,000 mg/kg for soil. Iron values for the sediments were greater than the ICSA, but the QC check was well within limits and no qualifications were required.

Laboratory Control Sample:

The LCS recovery for barium was at 56%. The LCS limit noted is 0 – 152%. These are extremely wide windows and the reviewer recommends considering this low bias in the use of the barium data. Data were not, however, qualified per the EPA guidance.

Detection Limits:

Note that the sediment samples for ICP were diluted 5x and those for ICPMS were diluted 10X. The analytes run by ICPMS were extremely high for lead, arsenic and vanadium. The review recommends using the ICP values that are in the raw data for these analytes, although the results were within an acceptable RPD. It is the lower values that are significantly different between the two types of analysis/instrumentation. The client will need to determine if the elevated limits meet project criteria.

Matrix Spike

Data are qualified JMS#, where # is the spike recovery. The EPA qualifier is 'J'. Data could be biased high or low proportional to the recovery. The sample results were > 4 x spike for outlier sediment spikes for aluminum, barium, iron, manganese, magnesium, zinc and calcium. Data are not qualified as the recovery is not statistically valid. The laboratory limits (65-125%) are wider than the CLP limits. The limits noted in the NFG are used for qualification. The following table lists the spike recoveries outside control limits, samples affected, and data qualifiers:

Field Duplicates:

If the UASE001 and 001D and the UASW001 and 001D are field duplicates, they meet the field duplicate precision criteria for low level and > 5 x CRQL results.

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
All sediment samples	Barium	J-	LCS 56% - recommended, but not applied	13
All sediment samples	Sodium	J+	MS 136%	9
All sediment samples	Titanium	J-	MS 67%	

## 1. DELIVERABLES

All deliverables were present as specified in the Statement of Work.

Yes    No X

Comments: There are Deliverable Submission Forms, but no actual laboratory log-in forms. The integrity of the samples cannot be verified. There are no courier forms or tracking identifications. Sample authentication cannot be verified.

Note that the laboratory forms do not contain times of analysis on the result forms nor on the QC and Calibration Forms. This is not uncommon for CLP-type forms, but it means that the raw data must be spot checked to verify the calibration associations. As there were no outliers, no further action is taken.

## 2. HOLDING TIMES AND PRESERVATION CRITERIA

All technical holding times and preservation criteria were met.

Yes X No   

Comments: The samples were analyzed within specified holding times (180 days for metals and 28 days for mercury). No temperature reading for the cooler was recorded. Per the chain of custody, there were pre-printed fields that noted the sediment samples were (to be) preserved to 4 C and the waters to pH<2, but this cannot be verified as there are no log-in forms.

No shipping or receiving problems were noted in the narrative. As the client was not notified of custody or integrity issues, no further action is taken.

## 3. INSTRUMENT CALIBRATIONS: STANDARDS AND BLANKS

Initial instrument calibrations were performed according to SOW requirements.

Yes X No   

Comments: None.

The instruments were calibrated daily and each time an analysis run was performed.

Yes X No   

Comments: None.

The instruments were calibrated using one blank and the appropriate number of standards.

Yes X No   

Comments: None.

**4. SAMPLE ANALYSIS RESULTS**

Sample analyses were entered correctly on Form Is.

Yes X      No \_\_\_\_\_

Comments:      None.

**5. INITIAL AND CONTINUING CALIBRATION VERIFICATION**

The initial and continuing calibration verification standards (ICV and CCV, respectively) met SOW requirements.

Yes X      No \_\_\_\_\_

Comments:      None.

The calibration verification results were within 90-110% recovery for metals, 85-115% for cyanide, and 80-120% for mercury.

Yes X      No \_\_\_\_\_

Comments:      None.

The continuing calibration standards were run at 10% frequency or every two hours.

Yes X      No \_\_\_\_\_

Comments:      None.

**6. CRQL CHECK STANDARD**

ICP Analysis: Standards (CRI) were analyzed at the beginning of each sample analysis run and every 20 analytical samples, immediately preceding the interferences check sample analyses, but not before ICV analysis.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

The CRI recoveries were within 70-130% (50 – 150% for ICP: Sb, Pb, Tl; ICP/MS: Co, Mn, Zn) for required elements.

Yes X      No \_\_\_\_\_

Comments:      None.

**7. BLANKS**

The initial and continuing calibration blanks (ICB and CCB, respectively) met SOW requirements.

Yes \_\_\_\_\_      No X \_\_\_\_\_

Comments: There are results reported for many of the ICB and CCBs, but none are above the MDLs recorded on the result forms (the ICB/CCB forms only note the PQLs) with the exception of iron reported at 28.9 mg/kg for QC set 1010049 for ICP soils. All data are > 5 x Blank and no qualification is required.

The continuing calibration blanks were run at 10% frequency.

Yes X      No \_\_\_\_\_

Comments:    None.

A laboratory/preparation blank was run at the frequency of one per twenty samples, or per sample delivery group (whichever is more frequent), and for each matrix analyzed.

Yes X      No \_\_\_\_\_

Comments:    None

All analyzed blanks were free of contamination.

Yes \_\_\_\_\_    No X

Comments:   The laboratory notes that cadmium was detected in the prep blank at < 2 x PQL. The result for cadmium is reported at 103 ug/kg. The RL for cadmium was raised from 20 ug/kg to 30 ug/kg. The client will need to determine if the elevated limits meet project criteria. All client data were > 5 x blank and no qualification is required.

## **8. ICP INTERFERENCE CHECK SAMPLE**

The ICP interference check sample (ICS) was run at the beginning of each sample analysis run, but not prior to the ICV.

Yes X      No \_\_\_\_\_

Comments:    None.

Percent recovery of the analytes in the ICS solutions were within the range of 80-120% or the result was within  $\pm 2x$  the CRQL.

Yes X      No \_\_\_\_\_

Comments:    None.

Sample results for aluminum, calcium, iron, and magnesium were less than the ICSA values.

Yes \_\_\_\_\_    No X

Comments:   The ICSA value for iron is 250,000 ug/l for water or 25,000 mg/kg for soil . Iron values for the sediments were greater than the ICSA, but The QC check was well within limits and no qualifications were required.

No sample results contain potential false positives and false negatives.

Yes X      No \_\_\_\_\_

Comments:      None.

## 9. MATRIX SPIKE SAMPLE ANALYSIS

A matrix spike sample was analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      UASE001 and UASW001 were used for the MS/MSD samples.

The percent recoveries (%Rs) were calculated correctly.

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      None.

Spike recoveries were within the range of 75-125% (an exception is granted where the sample concentration is four times the spike concentration).

Yes \_\_\_\_\_      No X

Comments: Data are qualified JMS#, where # is the spike recovery. Data could be biased high or low proportional to the recovery. The sample results were > 4 x spike for outlier sediment spikes for aluminum, barium, iron, manganese, magnesium, zinc and calcium. Data are not qualified as the recovery is not statistically valid. The laboratory limits (65-125%) are wider than the CLP limits. The limits noted above are used for qualification. The following table lists the spike recoveries outside control limits, post digestion spike recoveries, samples affected, and data qualifiers:

Element	Matrix Spike %R	Post-Digestion %R	Samples Affected	Qualifiers
Sodium	136/ 136	104%	All sediment detects	JMS136
Titanium	67/ 71	Not in post spike	All sediment samples	JMS67

## 10. POST DIGEST SPIKE RECOVERY

A post-digest spike was performed for those elements that did not meet the specified criteria (i.e., Pre-digestion/pre-distillation spike recovery falls outside of control limits and sample result is less than four times the spike amount added, exception: Ag, Hg).

Yes X      No \_\_\_\_\_      NA \_\_\_\_\_

Comments:      See Section 9.0.

**11. DUPLICATE SAMPLE ANALYSIS**

Duplicate sample analysis was performed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X    No \_\_\_\_\_    NA \_\_\_\_\_

Comments:    Duplicates and MS Duplicates are reported.

The RPDs were calculated correctly.

Yes X    No \_\_\_\_\_    NA \_\_\_\_\_

Comments:    None.

For sample concentrations greater than five times the CRQL, RPDs were < 20% (limits of <35% apply for soil/sediments/tailings samples).

Yes X    No \_\_\_\_\_    NA \_\_\_\_\_

Comments:    None.

For sample concentrations less than five times the CRQL, duplicate analysis results were within the control window of < CRQL (two times CRQL for soils).

Yes X    No \_\_\_\_\_    NA \_\_\_\_\_

Comments:    None.

**12. ICP-MS**

The ICP MS tune met SOW requirements.

Yes X    No \_\_\_\_\_    NA \_\_\_\_\_

Comments: The ICP MS instrument was correctly tuned prior to analysis and all tuning criteria were met. The % RSDs were within the 5% limits for the tune. The Ba/Ba++ and Ce/CeO ratios were reported and within limits. The amu (atomic mass units) at half peak width were within limits (in the range of 0.7 – 0.8).

The minimum number of internal standards were added to the analyses and bracketed the target analyte masses.

Yes X    No \_\_\_\_\_

Comments:    None.

All percent relative intensities were within 60-125%.

Yes X    No \_\_\_\_\_

Comments: None.

**13. LABORATORY CONTROL SAMPLE**

The laboratory control sample (LCS) was prepared and analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X No \_\_\_\_\_

Comments: Note that for sediments, the LCS does not contain titanium, strontium or molybdenum. This is not uncommon as the LCS is a standard reference soil and these analytes are not routinely present.

All results were within control limits.

Yes X No \_\_\_\_\_

Comments: The LCS recovery for barium was at 56%. The LCS limit noted is 0 – 152%. These are extremely wide windows and the reviewer recommends considering this low bias in the use of the barium data. Data were not, however, qualified per the EPA guidance.

**14. ICP-SERIAL DILUTION QC**

A serial dilution was performed for ICP analysis with every twenty or fewer samples of a similar matrix, or one per sample delivery group, whichever is more frequent.

Yes X No \_\_\_\_\_

Comments: None.

The serial dilution was without interference problems as defined by the SOW or NFG.

Yes X No \_\_\_\_\_

Comments: The serial dilution %Ds were less than 10% or the original sample result was less than 50> the RL.

**15. ANNUAL METHOD DETECTION LIMITS (MDL)**

MDLs were provided for all elements on the target analyte list.

Yes X No \_\_\_\_\_

Comments: Last updated February 2010

Reported MDLs met SOW requirements.

Yes X No \_\_\_\_\_

Comments: Note that the sediment samples for ICP were diluted 5x and those for ICPMS were diluted 10X. The analytes run by ICPMS were extremely high for lead, arsenic and vanadium. The review recommends using the ICP values that are in the raw data for these analytes, although the results were within an acceptable RPD. It is the lower values that are significantly different between the two types of analysis/ instrumentation. These can be reported in a comparison table upon request. The project manager will determine if project limits are met.

## 16. INTERELEMENT CORRECTION FACTORS FOR ICP

Interelement corrections for ICP were reported.

Yes    No X

Comments: Interelement corrections were not included. No action was required.

## 17. ICP LINEAR RANGES

ICP linear ranges were reported.

Yes X No   

Comments: The linear ranges were updated in February 2010.

## 18. PREPARATION LOG

Information on the preparation of samples for analysis was reported on laboratory bench sheets as part of the raw data deliverable.

Yes X No   

Comments: None.

## 19. ANALYSIS RUN LOG

A Form with the required information was filled out for each analysis run in the data package.

Yes X No   

Comments: None.

## 20. Additional Comments or Problems/Resolutions Not Addressed Above

Yes X No   

Comment: For the water samples, the location ID was logged for the sample ID so the UASW001 and UASW001D distinction was not carried over into the laboratory result forms. Laboratory sample C1010004-2 should be client ID UASW001D.

Samples were collected on 10/8/2010 and relinquished on 10/11/2010. There is no record of custody for that time period.

If the UASE001 and 001D and the UASW001 and 001D are field duplicates, they meet the field duplicate precision criteria for low level and > 5 x CRQL results.

There are no rinse blanks, which would be appropriate if dedicated equipment was used.

**INORGANIC DATA QUALITY ASSURANCE REVIEW****Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality. Use of additional qualifiers should be carefully considered. Definitions for all qualifiers used should be provided with each report.

**GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA**

- R - Reported value is "rejected." The data are unusable. Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity and is the approximate concentration of the analyte in the sample.
- J+ - The associated numerical value is an estimated quantity but the result may be biased high.
- J- - The associated numerical value is an estimated quantity but the result may be biased low.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound may or may not be present in the sample.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.) ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

## ACRONYMS

CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CRQL	Contract Required Quantitation Limit
CRI	CRQL standard required for ICP
CV	Cold Vapor
EPA	U.S. Environmental Protection Agency
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICSA	Interference Check Sample (Solution A)
ICSAB	Interference Check Sample (Solution AB)
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
MDL	Method Detection Limit
MS	Matrix Spike
MSD	MS Duplicate
NFG	EPA CLP National Functional Guidelines for Inorganic Data Review
PDS	Post Digestion Spike
QC	Quality Control
RPD	Relative Percent Difference
RPM	Regional Project Manager
RSD	Percent Relative Standard Deviation
SA	Spike Added
SAS	Special Analytical Services
SDG	Sample Delivery Group
SOW	Statement of Work
SR	Sample Result
SSR	Spiked Sample Result

Project Name: Upper Animas - Rush SED - Oct 2010

Certificate of Analysis

TDF #:

DG-214

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASE001D  
EPA Tag No.:Date / Time Sampled: 10/08/10 00:00  
Matrix: SedimentWorkorder: C101003  
Lab Number: C101003-01 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 200.2 / 200.8	Antimony	4230		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Arsenic	45400		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cadmium	990		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Chromium	3500		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cobalt	5360		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Lead	460000		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Molybdenum	4660		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Nickel	2840		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Selenium	2530		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Silver	2570		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Thallium	<997	U	ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Vanadium	19000		ug/kg dry wt	997	10	10/13/2010	SV	1010049
EPA 200.2/200.7	Aluminum	8250		mg/kg dry wt	9.97	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Barium	215		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Beryllium	<2.49	U	mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Calcium	1550		mg/kg dry wt	49.9	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Copper	116		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Iron	58400		mg/kg dry wt	49.9	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Magnesium	2630		mg/kg dry wt	49.9	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Manganese	801		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Potassium	1220		mg/kg dry wt	125	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Sodium	<249	U	mg/kg dry wt	125	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Strontium	83.6		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Titanium	23.8		mg/kg dry wt	2.49 J-	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Zinc	339		mg/kg dry wt	4.99	5	10/12/2010	SW	1010049

Project Name: Upper Animas - Rush SED - Oct 2010

## Certificate of Analysis

TDF #:

DG-214

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASE002	Date / Time Sampled: 10/08/10 00:00	Workorder: C101003
EPA Tag No.:	Matrix: Sediment	Lab Number: G101003-02 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 200.2 / 200.8	Antimony	5800		ug/kg dry wt	500	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Arsenic	49600		ug/kg dry wt	500	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cadmium	674		ug/kg dry wt	99.9	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Chromium	2890		ug/kg dry wt	500	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cobalt	2600		ug/kg dry wt	99.9	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Lead	382000		ug/kg dry wt	99.9	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Molybdenum	3410		ug/kg dry wt	99.9	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Nickel	2230		ug/kg dry wt	500	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Selenium	2760		ug/kg dry wt	500	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Silver	2820		ug/kg dry wt	99.9	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Thallium	1170		ug/kg dry wt	500	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Vanadium	18300		ug/kg dry wt	999	10	10/13/2010	SV	1010049
EPA 200.2/200.7	Aluminum	5420		mg/kg dry wt	9.99	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Barium	326		mg/kg dry wt	0.999	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Beryllium	< 2.50	U	mg/kg dry wt	0.999	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Calcium	863		mg/kg dry wt	50.0	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Copper	39.5		mg/kg dry wt	0.999	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Iron	46900		mg/kg dry wt	50.0	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Magnesium	2220		mg/kg dry wt	50.0	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Manganese	235		mg/kg dry wt	0.999	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Potassium	1380		mg/kg dry wt	125	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Sodium	< 250	U	mg/kg dry wt	125	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Strontium	90.9		mg/kg dry wt	0.999	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Titanium	17.5		mg/kg dry wt	2.50	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Zinc	199		mg/kg dry wt	5.00	5	10/12/2010	SW	1010049

Project Name: Upper Animas - Rush SED - Oct 2010

Certificate of Analysis

TDF #: DG-214

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASE003  
EPA Tag No.:Date / Time Sampled: 10/08/10 00:00  
Matrix: SedimentWorkorder: C101003  
Lab Number: C101003-03 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 200.2 / 200.8	Antimony	1190		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Arsenic	19800		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cadmium	8840		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Chromium	4120		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cobalt	11500		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Lead	882000		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Molybdenum	7200		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Nickel	7950		ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Selenium	877	J	ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Silver	5080		ug/kg dry wt	99.7	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Thallium	503	J	ug/kg dry wt	499	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Vanadium	18000		ug/kg dry wt	997	10	10/13/2010	SV	1010049
EPA 200.2 / 200.7	Aluminum	9830		mg/kg dry wt	9.97	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Barium	128		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Beryllium	1.58	J	mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Calcium	3420		mg/kg dry wt	49.9	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Copper	203		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Iron	24800		mg/kg dry wt	49.9	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Magnesium	5520		mg/kg dry wt	49.9	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Manganese	8730		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Potassium	750		mg/kg dry wt	125	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Sodium	< 249	U	mg/kg dry wt	125	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Strontium	44.9		mg/kg dry wt	0.997	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Titanium	62.7		mg/kg dry wt	2.49 J	5	10/12/2010	SW	1010049
EPA 200.2 / 200.7	Zinc	2400		mg/kg dry wt	4.99	5	10/12/2010	SW	1010049

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASE001	Date / Time Sampled: 10/08/10 00:00	Workorder: C101003
EPA Tag No.:	Matrix: Sediment	Lab Number: C101003-04 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
EPA 200.2 / 200.8	Antimony	5410		ug/kg dry wt	494	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Arsenic	52900		ug/kg dry wt	494	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cadmium	829		ug/kg dry wt	98.8	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Chromium	3490		ug/kg dry wt	494	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Cobalt	4590		ug/kg dry wt	98.8	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Lead	531000		ug/kg dry wt	98.8	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Molybdenum	5560		ug/kg dry wt	98.8	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Nickel	2830		ug/kg dry wt	494	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Selenium	2980		ug/kg dry wt	494	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Silver	3790		ug/kg dry wt	98.8	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Thallium	643	J	ug/kg dry wt	494	10	10/13/2010	SV	1010049
EPA 200.2 / 200.8	Vanadium	19300		ug/kg dry wt	988	10	10/13/2010	SV	1010049
EPA 200.2/200.7	Aluminum	9450		mg/kg dry wt	9.88	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Barium	261		mg/kg dry wt	0.988	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Beryllium	<2.47	U	mg/kg dry wt	0.988	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Calcium	1620		mg/kg dry wt	49.4	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Copper	158		mg/kg dry wt	0.988	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Iron	63100		mg/kg dry wt	49.4	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Magnesium	2490		mg/kg dry wt	49.4	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Manganese	602		mg/kg dry wt	0.988	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Potassium	1330		mg/kg dry wt	124	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Sodium	<247	U	mg/kg dry wt	124	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Strontium	91.8		mg/kg dry wt	0.988	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Titanium	20.1		mg/kg dry wt	2.47 J	5	10/12/2010	SW	1010049
EPA 200.2/200.7	Zinc	364		mg/kg dry wt	4.94	5	10/12/2010	SW	1010049

"J" Qualifier indicates an estimated value

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Project Name: Upper Animas - Rush Water - Oct 2010

Certificate of Analysis

TDF #: DG-214

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID:	UASW001	Date / Time Sampled:	10/08/10 00:00	Workorder:	C101004
EPA Tag No.:		Matrix:	Water	Lab Number:	C101004-01 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	3240		ug/L	20.0	1	10/11/2010	SW	1010050
200.7	Barium	18.1		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Beryllium	< 5.00	U	ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Calcium	107000		ug/L	100	1	10/11/2010	SW	1010050
200.7	Copper	88.6		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Iron	2170		ug/L	100	1	10/11/2010	SW	1010050
200.7	Magnesium	6790		ug/L	100	1	10/11/2010	SW	1010050
200.7	Manganese	3040		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Potassium	1200		ug/L	250	1	10/11/2010	SW	1010050
200.7	Sodium	3300		ug/L	250	1	10/11/2010	SW	1010050
200.7	Strontium	1230		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Thallium	< 50.0	U	ug/L	20.0	1	10/11/2010	SW	1010050
200.7	Titanium	< 20.0	U	ug/L	5.00	1	10/11/2010	SW	1010050
200.7	Zinc	1530		ug/L	10.0	1	10/11/2010	SW	1010050
200.8	Antimony	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Cadmium	4.54		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Chromium	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Cobalt	12.7		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Lead	8.38		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Molybdenum	1.23	J	ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Nickel	6.69	J	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Selenium	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Silver	1.19	J	ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	10/12/2010	SV	1010052
2340B	Hardness	295		mg/L	2	1	10/11/2010	SW	1010050

DS 4/10

TDF #: DG-214

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID:	UASW001 D	Date / Time Sampled:	10/08/10 00:00	Workorder:	C101004
EPA Tag No.:		Matrix:	Water	Lab Number:	C101004-02 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	3320		ug/L	20.0	1	10/11/2010	SW	1010050
200.7	Barium	18.4		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Beryllium	< 5.00	U	ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Calcium	108000		ug/L	100	1	10/11/2010	SW	1010050
200.7	Copper	91.3		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Iron	2180		ug/L	100	1	10/11/2010	SW	1010050
200.7	Magnesium	6930		ug/L	100	1	10/11/2010	SW	1010050
200.7	Manganese	3060		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Potassium	1210		ug/L	250	1	10/11/2010	SW	1010050
200.7	Sodium	3350		ug/L	250	1	10/11/2010	SW	1010050
200.7	Strontium	1260		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Thallium	< 50.0	U	ug/L	20.0	1	10/11/2010	SW	1010050
200.7	Titanium	< 20.0	U	ug/L	5.00	1	10/11/2010	SW	1010050
200.7	Zinc	1550		ug/L	10.0	1	10/11/2010	SW	1010050
200.8	Antimony	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Cadmium	4.91		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Chromium	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Cobalt	11.5		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Lead	7.99		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Nickel	5.49	J	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Selenium	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Silver	< 5.00	U	ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	10/12/2010	SV	1010052
2340B	Hardness	299		mg/L	2	1	10/11/2010	SW	1010050

Project Name: Upper Animas - Rush Water - Oct 2010

Certificate of Analysis

TDF #:

DG-214

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID: UASW002

EPA Tag No.:

Date / Time Sampled:

Matrix: Water

10/08/10 00:00

Workorder:

C101004

Lab Number:

C101004-03

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7350		ug/L	20.0	1	10/11/2010	SW	1010050
200.7	Barium	12.5		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Beryllium	< 5.00	U	ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Calcium	165000		ug/L	100	1	10/11/2010	SW	1010050
200.7	Copper	180		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Iron	7260		ug/L	100	1	10/11/2010	SW	1010050
200.7	Magnesium	10400		ug/L	100	1	10/11/2010	SW	1010050
200.7	Manganese	4570		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Potassium	1750		ug/L	250	1	10/11/2010	SW	1010050
200.7	Sodium	4350		ug/L	250	1	10/11/2010	SW	1010050
200.7	Strontium	1950		ug/L	2.00	1	10/11/2010	SW	1010050
200.7	Thallium	< 50.0	U	ug/L	20.0	1	10/11/2010	SW	1010050
200.7	Titanium	< 20.0	U	ug/L	5.00	1	10/11/2010	SW	1010050
200.7	Zinc	2590		ug/L	10.0	1	10/11/2010	SW	1010050
200.8	Antimony	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Cadmium	7.50		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Chromium	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Cobalt	22.5		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Lead	30.7		ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Nickel	11.4		ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Selenium	< 10.0	U	ug/L	5.00	10	10/12/2010	SV	1010052
200.8	Silver	< 5.00	U	ug/L	1.00	10	10/12/2010	SV	1010052
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	10/12/2010	SV	1010052
2340B	Hardness	456		mg/L	2	1	10/11/2010	SW	1010050

4/4/11  
K3A

TDF #: DG-214

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID:	UASW003	Date / Time Sampled:	10/08/10 00:00	Workorder:	C101004
EPA Tag No.:		Matrix:	Water	Lab Number:	C101004-04 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed By	Batch
200.7	Aluminum	75.3		ug/L	20.0	1	10/11/2010 SW	1010050
200.7	Barium	25.5		ug/L	2.00	1	10/11/2010 SW	1010050
200.7	Beryllium	< 5.00	U	ug/L	2.00	1	10/11/2010 SW	1010050
200.7	Calcium	49500		ug/L	100	1	10/11/2010 SW	1010050
200.7	Copper	3.69		ug/L	2.00	1	10/11/2010 SW	1010050
200.7	Iron	< 250	U	ug/L	100	1	10/11/2010 SW	1010050
200.7	Magnesium	3190		ug/L	100	1	10/11/2010 SW	1010050
200.7	Manganese	1480		ug/L	2.00	1	10/11/2010 SW	1010050
200.7	Potassium	639	J	ug/L	250	1	10/11/2010 SW	1010050
200.7	Sodium	2280		ug/L	250	1	10/11/2010 SW	1010050
200.7	Strontium	509		ug/L	2.00	1	10/11/2010 SW	1010050
200.7	Thallium	< 50.0	U	ug/L	20.0	1	10/11/2010 SW	1010050
200.7	Titanium	< 20.0	U	ug/L	5.00	1	10/11/2010 SW	1010050
200.7	Zinc	338		ug/L	10.0	1	10/11/2010 SW	1010050
200.8	Antimony	< 5.00	U	ug/L	2.50	5	10/12/2010 SV	1010052
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	10/12/2010 SV	1010052
200.8	Cadmium	0.640	J	ug/L	0.500	5	10/12/2010 SV	1010052
200.8	Chromium	< 5.00	U	ug/L	2.50	5	10/12/2010 SV	1010052
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	10/12/2010 SV	1010052
200.8	Lead	< 1.00	U	ug/L	0.500	5	10/12/2010 SV	1010052
200.8	Molybdenum	0.984	J	ug/L	0.500	5	10/12/2010 SV	1010052
200.8	Nickel	< 5.00	U	ug/L	2.50	5	10/12/2010 SV	1010052
200.8	Selenium	< 5.00	U	ug/L	2.50	5	10/12/2010 SV	1010052
200.8	Silver	< 2.50	U	ug/L	0.500	5	10/12/2010 SV	1010052
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	10/12/2010 SV	1010052
2340B	Hardness	137		mg/L	2	1	10/11/2010 SW	1010050

"J" Qualifier indicates an estimated value

**REGION VIII**  
**DATA VALIDATION REPORT**  
**INORGANIC**

Case No. / TDD No.	Site Name	Operable Unit	
C101101 / 1008-13	Upper Animas Mining District		
RPM/OSC Name			
Sabrina Forrest			
Contractor Laboratory	Contract No.	TDF No.	Laboratory DPO/Region
ESAT – TechLaw, Inc.		DG-216 surface water and mine discharge	

Review Assigned Date March 28, 2011  
 Review Completion Date March 31, 2011

Data Validator Diane Short & Assoc. Review  
 Report Reviewer Kent Alexander

Station	Client ID	Lab ID	Sample Type
<b>Method 200.7 ICP, 200.8 ICPMS Total and Dissolved (D)</b>			
A68	UASW003	C101101-01	Surface Water
A72	UASW029	C101101-02	Surface Water
CC01F	UASW030	C101101-03	Surface Water
CC01S	UASW024	C101101-04	Surface Water
CC01T	UASW023	C101101-05	Surface Water
CC02A	UASW022	C101101-06	Surface Water
CC02D	UAAD004	C101101-07	Mine Discharge (D)
CC02D	UAAD004	C101101-08	Mine Discharge
CC03C	UAAD003	C101101-09	Mine Discharge (D)
CC03C	UAAD003	C101101-10	Mine Discharge
CC03D	UASW015	C101101-11	Surface Water
CC06	UAAD002	C101101-12	Mine Discharge (D)
CC06	UAAD002	C101101-13	Mine Discharge
CC17	UASW005	C101101-14	Surface Water
CC17 DUP	UASW098	C101101-15	Surface Water
CC18	UASW007	C101101-16	Surface Water
CC19	UAAD001	C101101-17	Mine Discharge (D)
CC19	UAAD001	C101101-18	Mine Discharge

Station	Client ID	Lab ID	Sample Type
CC48	UASW035	C101101-19	Surface Water
CC48 DUP	UASW097	C101101-20	Surface Water
CCOPP-12	UASW016	C101101-21	Surface Water
M34	UASW033	C101101-22	Surface Water
UASW001	UASW001	C101101-23	Surface Water
UASW002	UASW002	C101101-24	Surface Water
UASW004	UASW004	C101101-25	Surface Water
UASW006	UASW006	C101101-26	Surface Water
UASW008	UASW008	C101101-27	Surface Water
UASW009	UASW009	C101101-28	Surface Water
UASW010	UASW010	C101101-29	Surface Water
UASW011	UASW011	C101101-30	Surface Water
UASW012	UASW012	C101101-31	Surface Water
UASW013	UASW013	C101101-32	Surface Water
UASW014	UASW014	C101101-33	Surface Water
UASW017	UASW017	C101101-34	Surface Water
UASW018	UASW018	C101101-35	Surface Water
UASW019	UASW019	C101101-36	Surface Water
UASW019 DUP	UASW099	C101101-37	Surface Water
UASW020	UASW020	C101101-38	Surface Water
UASW021	UASW021	C101101-39	Surface Water
UASW032	UASW032	C101101-40	Surface Water
UASW034	UASW034	C101101-41	Surface Water
UASW036	UASW036	C101101-42	Surface Water
UASW037	UASW037	C101101-43	Surface Water
UASW039	UASW039	C101101-44	Surface Water
UASW040	UASW040	C101101-45	Surface Water
UASW041	UASW041	C101101-46	Surface Water
UASW042	UASW042	C101101-47	Surface Water
UASW043	UASW043	C101101-48	Surface Water
UASW044	UASW044	C101101-49	Surface Water
UASW045	UASW045	C101101-50	Surface Water
UASW046	UASW046	C101101-51	Surface Water
UASW047	UASW047	C101101-52	Surface Water
UASW049	UASW049	C101101-53	Surface Water
UASW050	UASW050	C101101-54	Surface Water
UASW054	UASW054	C101101-55	Surface Water
UASW056	UASW056	C101101-56	Surface Water
UASW058	UASW058	C101101-57	Surface Water
UASW059	UASW059	C101101-58	Surface Water

Station	Client ID	Lab ID	Sample Type
<b>Analysis for Hardness SM 2340B</b>			
CC02D	UAAD004	C101101-07	Mine Discharge
CC03C	UAAD003	C101101-09	Mine Discharge
CC06	UAAD002	C101101-12	Mine Discharge
CC19	UAAD001	C101101-17	Mine Discharge

**URS OPERATING SERVICES, INC.**  
**START 3 - REGION 8**



**MEMORANDUM**

**TO:** File

**FROM:** Kent Alexander *KA*

**DATE:** July 22, 2011

**SUBJECT:** Upper Animas Mining District Inorganic Data Validation Report for Work Order C101101 and TDF DG-216, Dissolved vs Total Metals Analysis

---

There were 4 mine water samples that were analyzed for both total and dissolved metals and were labeled as such on the Form I's. All of the surface water samples were analyzed for total metals although they were filtered in the field and should have been labeled as analyzed for dissolved metals. The "Total Recov" was crossed out and "Dissolved" written in, dated and initialed by me.

**cc:** File/ UOS

## DATA QUALITY STATEMENT

- ( ) Data are ACCEPTABLE according to EPA Functional guidelines with no qualifiers (flags) added by the reviewer.  
( ) Data are UNACCEPTABLE according to EPA Functional Guidelines.  
(X) Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X \_\_\_\_\_

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X \_\_\_\_\_ If yes, list the items that require attention:

**URS**

**URS OPERATING SERVICES, INC.**  
**START 3 - REGION 8**

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**TO:** File

**FROM:** Kent Alexander *KA*

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(X) Data are acceptable with QUALIFICATIONS noted in review.

Telephone/Communication Logs Enclosed? Yes \_\_\_\_\_ No X \_\_\_\_\_

CLP Project Officer Attention Required? Yes \_\_\_\_\_ No X \_\_\_\_\_ If yes, list the items that require attention:

**INORGANIC DATA VALIDATION REPORT****REVIEW NARRATIVE SUMMARY**

This data package was reviewed according to "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," January 2010.

Raw data were reviewed for completeness and transcription accuracy onto the summary forms. Approximately 10-20% of the results reported in each of the samples, calibrations, and QC analyses were recalculated and verified representing all data packages received for this review. If problems were identified during the recalculation of results, a more thorough calculation check was performed.

The data package, TDF No. DG-216, consisted of 54 total surface water and mine discharge and 4 dissolved mine discharge samples for Total Recoverable Metals and Dissolved Metals by Methods 200.7 ICP and 200.8 by ICPMS. The following table lists the data qualifiers added to the sample analyses. Please see Data Qualifier Definitions, attached to the end of this report.

<b>Station ID</b>	<b>Client ID</b>	<b>Lab ID</b>	<b>Analyte</b>	<b>Result ug/L</b>	<b>EPA Qualifier</b>	<b>DSA Qualifier</b>
A68	UASW003	C101101-01	Silver	0.843	U	UCB.6
A68	UASW003	C101101-01	Molybdenum	3.63	U	UCB1.35
CC01S	UASW024	C101101-04	Beryllium	0.968	J+	JC110.3
CC02D	UAAD004	C101101-07	Molybdenum	1.99	U	UCB1.25
CC02D	UAAD004	C101101-08	Beryllium	4.82	J+	JC110.3
CC03C	UAAD003	C101101-09	Molybdenum	1.54	U	UCB2.5
CC03C	UAAD003	C101101-10	Beryllium	8.40	J+	JC110.3
CC03D	UASW015	C101101-11	Beryllium	6.95	J+	JC110.3
CC06	UAAD002	C101101-13	Beryllium	7.03	J+	JC110.3
CC17	UASW005	C101101-14	Molybdenum	0.535	U	UCB1.35
CC18	UASW007	C101101-16	Beryllium	3.54	J+	JC110.3
CC19	UAAD001	C101101-18	Beryllium	4.18	J+	JC110.3
CC48 DUP	UASW097	C101101-20	Beryllium	1.30	J+	JC110.3
UASW001	UASW001	C101101-23	Beryllium	1.17	J+	JC110.3
UASW002	UASW002	C101101-24	Silver	0.953	U	UCB.6
UASW002	UASW002	C101101-24	Molybdenum	1.04	U	UCB1.35
UASW034	UASW034	C101101-41	Molybdenum	0.670	U	UCB1.35
UASW036	UASW036	C101101-42	Molybdenum	0.900	U	UCB1.35
UASW036	UASW036	C101101-42	Silver	0.891	U	UCB.6
UASW037	UASW037	C101101-43	Molybdenum	0.557	U	UCB1.35

**Sample Tracking:**

There are Deliverable Submission Forms, but no actual laboratory log-in forms. The integrity of the samples cannot be verified. There are no courier forms or tracking identifications. Sample authentication cannot be verified.

Note that the laboratory forms do not contain dates or times of analysis on the result forms nor on the QC and Calibration Forms. This is not uncommon for CLP-type forms, but it means that the raw data must be spot checked to verify the calibration associations. This was performed only for any outliers listed on the Calibration or QC forms.

No shipping or receiving problems were noted in the narrative. As the client was not notified of custody or integrity issues, no further action is taken.

Blanks:

There are results reported for many of the ICB and CCBs, but none are above the MDLs recorded on the result forms (the ICB/CCB forms only note the PQLs) with the exception of molybdenum reported at 0.25 ug/L for QC set 1011004 and 0.27 ug/l for QC 1011092, 093 and 094; silver at 0.15 ug/l for QC 1011004 and 0.12 ug/L for QC 1011092, 093 and 094 for ICPMS. The highest associated blank is applied to noted data. All ICPMS data are diluted 5 to 10 x for analysis and the Blank must also be multiplied by 5 or 10 in order to apply it to the client data. Data are qualified 'UCB#', where # is the applied blank value. The EPA Qualifier is 'U'.

The laboratory notes that molybdenum was detected in the prep blank at < 2 x PQL. The RL for was raised from 0.20 ug/L to 0.40 ug/L. The client will need to determine if the elevated limits meet project criteria. The standard procedure for outlier blanks is to re-analyze the data with an acceptable blank.

Calibration:

One CCV was very slightly high for beryllium at 110.3%. This is noted for Sequence 1011097. The run logs had to be accessed as the Sequences are not noted on the Results forms which have on Batch numbers – and the Calibration forms do not have dates, times or Batch numbers. This is associated with Batch 1011092. Having a consistent association of samples to calibrations on the forms would be useful. Detected data for beryllium in batch 1011092 are qualified 'JC110.3' to indicate a slight high bias. The EPA qualifier is 'J'

Matrix Spike:

The sample results were > 4 x spike for outlier spikes for manganese, magnesium, zinc and calcium. Data are not qualified as the recovery is not statistically valid. The laboratory limits (65-125%) are wider than the CLP limits. The limits noted above are used for qualification. After consideration of the 4x recoveries, no data are qualified.

Detection Limits:

Note that the samples for ICPMS were diluted 5x to 10x. The analytes run by ICPMS were extremely high for lead, cadmium and sometimes copper. The review recommends using the ICP values that are in the raw data for these analytes, although the results were within an acceptable RPD. It is the lower values that are significantly different between the two types of analysis/instrumentation. The client will need to determine if the elevated limits meet project criteria.

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
All detected data in QC set 1011092	Beryllium	J+	C110.3	5
All detected data in QC set 1011004	Silver		None, non-detect	7

Sample ID	Elements	Qualifiers	Reason for Qualification	Review Section
All detected data in QC set 1011092, 093, 094	Silver	U	CB.12 (multiplied by dilution factor)	7
All detected data in QC set 1011004	Molybdenum	U	CB.25 (multiplied by dilution factor)	7
All detected data in QC set 1011092, 093, 094	Molybdenum	U	CB.27 (multiplied by dilution factor)	7

There are no rinse blanks, which is acceptable for dedicated sampling equipment.

Field duplicates were identified in the EDD and fully meet field RPD criteria of 20% RPD or  $\pm 1x$  CRQL for waters.:

UASW005 and 098  
UASW035 and 097  
UASW019 and 099

## 1. DELIVERABLES

All deliverables were present as specified in the Statement of Work.

Yes    No X

Comments: There are Deliverable Submission Forms, but no actual laboratory log-in forms. The integrity of the samples cannot be verified. There are no courier forms or tracking identifications. Sample authentication cannot be verified.

Note that the laboratory forms do not contain dates or times of analysis on the result forms nor on the QC and Calibration Forms. This is not uncommon for CLP-type forms, but it means that the raw data must be spot checked to verify the calibration associations. This was performed only for any outliers listed on the Calibration or QC forms.

## 2. HOLDING TIMES AND PRESERVATION CRITERIA

All technical holding times and preservation criteria were met.

Yes X No   

Comments: The samples were analyzed within specified holding times (180 days for metals and 28 days for mercury). No temperature reading for the cooler was recorded. Per the chain of custody, there were pre-printed fields that noted the sediment samples were (to be) preserved to 4 C and the waters to pH<2, but this cannot be verified as there are no log-in forms.

No shipping or receiving problems were noted in the narrative. As the client was not notified of custody or integrity issues, no further action is taken.

## 3. INSTRUMENT CALIBRATIONS: STANDARDS AND BLANKS

Initial instrument calibrations were performed according to SOW requirements.

Yes X No   

Comments: None

The instruments were calibrated daily and each time an analysis run was performed.

Yes X No   

Comments: None.

The instruments were calibrated using one blank and the appropriate number of standards.

Yes X No   

Comments: None.

**4. SAMPLE ANALYSIS RESULTS**

Sample analyses were entered correctly on Form Is.

Yes X      No \_\_\_\_\_

Comments: Per the 10% raw data check.

**5. INITIAL AND CONTINUING CALIBRATION VERIFICATION**

The initial and continuing calibration verification standards (ICV and CCV, respectively) met SOW requirements.

Yes X      No \_\_\_\_\_

Comments: None

The calibration verification results were within 90-110% recovery for metals, 85-115% for cyanide, and 80-120% for mercury.

Yes \_\_\_\_\_ No X

Comments: One CCV was very slightly high for beryllium at 110.3%. This is noted for Sequence 1011097. The run logs had to be accessed as the Sequences are not noted on the Results forms which have only Batch numbers – and the Calibration forms do not have dates, times or Batch numbers. This is associated with Batch 1011092. Having a consistent association of samples to calibrations on the forms would be useful. Detected data for beryllium in batch 1011092 are qualified 'JC110.3' to indicate a slight high bias. The EPA qualifier is 'J+'.

The continuing calibration standards were run at 10% frequency or every two hours.

Yes X      No \_\_\_\_\_

Comments: None.

**6. CRQL CHECK STANDARD**

ICP Analysis: Standards (CRI) were analyzed at the beginning of each sample analysis run and every 20 analytical samples, immediately preceding the interferences check sample analyses, but not before ICV analysis.

Yes X      No \_\_\_\_\_ NA \_\_\_\_\_

Comments: None.

The CRI recoveries were within 70-130% (50 – 150% for ICP: Sb, Pb, Tl; ICP/MS: Co, Mn, Zn) for required elements.

Yes X      No \_\_\_\_\_

Comments: None.

## 7. BLANKS

The initial and continuing calibration blanks (ICB and CCB, respectively) met SOW requirements.

Yes    No X

Comments: There are results reported for many of the ICB and CCBs, but none are above the MDLs recorded on the result forms (the ICB/CCB forms only note the PQLs) with the exception of molybdenum reported at 0.25 ug/L for QC set 1011004 and 0.27 ug/l for QC 1011092, 093 and 094; silver at 0.15 ug/l for QC 1011004 and 0.12 ug/L for QC 1011092, 093 and 094 for ICPMS. The highest associated blank is applied to noted data. All ICPMS data are diluted 5 to 10 x for analysis and the Blank must also be multiplied by 5 or 10 in order to apply it to the client data. Data are qualified 'UCB#', where # is the applied blank value. The EPA Qualifier is 'U'.

The continuing calibration blanks were run at 10% frequency.

Yes X No   

Comments: None.

A laboratory/preparation blank was run at the frequency of one per twenty samples, or per sample delivery group (whichever is more frequent), and for each matrix analyzed.

Yes X No   

Comments: None

All analyzed blanks were free of contamination.

Yes    No X

Comments: The laboratory notes that molybdenum was detected in the prep blank at < 2 x PQL. The RL for was raised from 0.20 ug/L to 0.40 ug/L. It was also detected in the calibration blanks. The client will need to determine if the elevated limits meet project criteria. The standard procedure for outlier blanks is to re-analyze the data with an acceptable blank. See calibration blank section.

## 8. ICP INTERFERENCE CHECK SAMPLE

The ICP interference check sample (ICS) was run at the beginning of each sample analysis run, but not prior to the ICV.

Yes X No   

Comments: None.

Percent recovery of the analytes in the ICS solutions were within the range of 80-120% or the result was within  $\pm 2$ x the CRQL.

Yes X No   

Comments: None.

Sample results for aluminum, calcium, iron, and magnesium were less than the ICSA values.

Yes X      No \_\_\_\_\_

Comments: None

No sample results contain potential false positives and false negatives.

Yes X      No \_\_\_\_\_

Comments: None.

## **9. MATRIX SPIKE SAMPLE ANALYSIS**

A matrix spike sample was analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_ NA \_\_\_\_\_

Comments: Frequency met with client samples.

The percent recoveries (%Rs) were calculated correctly.

Yes X      No \_\_\_\_\_ NA \_\_\_\_\_

Comments: None.

Spike recoveries were within the range of 75-125% (an exception is granted where the sample concentration is four times the spike concentration).

Yes X      No \_\_\_\_\_

Comments: The sample results were > 4 x spike for outlier spikes for manganese, magnesium, zinc and calcium. Data are not qualified as the recovery is not statistically valid. The laboratory limits (65-125%) are wider than the CLP limits. The limits noted above are used for qualification. After consideration of the 4x recoveries, no data are qualified.

## **10. POST DIGEST SPIKE RECOVERY**

A post-digest spike was performed for those elements that did not meet the specified criteria (i.e., Pre-digestion/pre-distillation spike recovery falls outside of control limits and sample result is less than four times the spike amount added, exception: Silver, mercury).

Yes X      No \_\_\_\_\_ NA \_\_\_\_\_

Comments: See Section 9.0.

## **11. DUPLICATE SAMPLE ANALYSIS**

Duplicate sample analysis was performed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_ NA \_\_\_\_\_

Comments: Duplicates and MS Duplicates are reported.

The RPDs were calculated correctly.

Yes  No  NA

Comments: None.

For sample concentrations greater than five times the CRQL, RPDs were < 20% (limits of <35% apply for soil/sediments/tailings samples).

Yes  No  NA

Comments: None.

For sample concentrations less than five times the CRQL, duplicate analysis results were within the control window of < CRQL (two times CRQL for soils).

Yes  No  NA

Comments: None.

## 12. ICP-MS

The ICP MS tune met SOW requirements.

Yes  No  NA

Comments: The ICP MS instrument was correctly tuned prior to analysis and all tuning criteria were met. The % RSDs were within the 5% limits for the tune. The Ba/Ba++ and Ce/CeO ratios were reported and within limits. The amu (atomic mass units) at half peak width were within limits (in the range of 0.7 – 0.8).

The minimum number of internal standards were added to the analyses and bracketed the target analyte masses.

Yes  No

Comments: None.

All percent relative intensities were within 60-125%.

Yes  No

Comments: Per the 10% check of project data.

**13. LABORATORY CONTROL SAMPLE**

The laboratory control sample (LCS) was prepared and analyzed with every twenty or fewer samples of a similar matrix, or one per sample delivery group (whichever is more frequent).

Yes X      No \_\_\_\_\_

All results were within control limits.

Yes X      No \_\_\_\_\_

Comments: None

**14. ICP-SERIAL DILUTION QC**

A serial dilution was performed for ICP analysis with every twenty or fewer samples of a similar matrix, or one per sample delivery group, whichever is more frequent.

Yes X      No \_\_\_\_\_

Comments: None.

The serial dilution was without interference problems as defined by the SOW or NFG.

Yes X      No \_\_\_\_\_

Comments: The serial dilution %Ds were less than 10% or the original sample result was less than 50> the RL.

**15. ANNUAL METHOD DETECTION LIMITS (MDL)**

MDLs were provided for all elements on the target analyte list.

Yes X      No \_\_\_\_\_

Comments: Last updated February 2010

Reported MDLs met SOW requirements.

Yes X      No \_\_\_\_\_

Comments: Note that the samples for ICPMS were diluted 5x to 10x. The analytes run by ICPMS were extremely high for lead, cadmium and sometimes copper. The review recommends using the ICP values that are in the raw data for these analytes, although the results were within an acceptable RPD. It is the lower values that are significantly different between the two types of analysis/instrumentation. The client will need to determine if the elevated limits meet project criteria.

**16. INTERELEMENT CORRECTION FACTORS FOR ICP**

Interelement corrections for ICP were reported.

Yes        No X

Comments: Interelement corrections were not included. No action was required.

**17. ICP LINEAR RANGES**

ICP linear ranges were reported.

Yes X No       

Comments: The linear ranges were updated in February 2010.

**18. PREPARATION LOG**

Information on the preparation of samples for analysis was reported on laboratory bench sheets as part of the raw data deliverable.

Yes X No       

Comments: None.

**19. ANALYSIS RUN LOG**

A Form with the required information was filled out for each analysis run in the data package.

Yes X No       

Comments: None.

**20. Additional Comments or Problems/Resolutions Not Addressed Above**

Yes X No       

Comment:

There are no rinse blanks, which would be appropriate if dedicated equipment was used.

Field duplicates were identified in the EDD and fully meet field RPD criteria of 20% RPD or  $\pm 1 \times CRQL$  for waters.

UASW005 and 098

UASW035 and 097

UASW019 and 099

**INORGANIC DATA QUALITY ASSURANCE REVIEW****Region VIII****DATA QUALIFIER DEFINITIONS**

For the purpose of Data Validation, the following code letters and associated definitions are provided for use by the data validator to summarize the data quality. Use of additional qualifiers should be carefully considered. Definitions for all qualifiers used should be provided with each report.

**GENERAL QUALIFIERS for use with both INORGANIC and ORGANIC DATA**

- R - Reported value is "rejected." The data are unusable. Resampling or reanalysis may be necessary to verify the presence or absence of the compound.
- J - The associated numerical value is an estimated quantity and is the approximate concentration of the analyte in the sample.
- J+ - The associated numerical value is an estimated quantity but the result may be biased high.
- J- - The associated numerical value is an estimated quantity but the result may be biased low.
- U J - The reported quantitation limit is estimated because Quality Control criteria were not met. Element or compound may or may not be present in the sample.
- N J - Estimated value of a tentatively identified compound. (Identified with a CAS number.)  
ORGANICS analysis only.
- U - The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

## ACRONYMS

CCB	Continuing Calibration Blank
CCV	Continuing Calibration Verification
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
CRQL	Contract Required Quantitation Limit
CRI	CRQL standard required for ICP
CV	Cold Vapor
EPA	U.S. Environmental Protection Agency
ICB	Initial Calibration Blank
ICP	Inductively Coupled Plasma
ICS	Interference Check Sample
ICSA	Interference Check Sample (Solution A)
ICSAAB	Interference Check Sample (Solution AB)
ICV	Initial Calibration Verification
LCS	Laboratory Control Sample
MDL	Method Detection Limit
MS	Matrix Spike
MSD	MS Duplicate
NFG	EPA CLP National Functional Guidelines for Inorganic Data Review
PDS	Post Digestion Spike
QC	Quality Control
RPD	Relative Percent Difference
RPM	Regional Project Manager
RSD	Percent Relative Standard Deviation
SA	Spike Added
SAS	Special Analytical Services
SDG	Sample Delivery Group
SOW	Statement of Work
SR	Sample Result
SSR	Spiked Sample Result

START, Denver, CO  
EPA Contract Number: EP-W-05-050

**CHAIN OF CUSTODY RECORD**

Site #: 085M

Contact Name: Andrew Longworth  
Contact Phone: 720 810 0780

No: 085M-10/28/10-0002

Cooler #: 1

Lab: ESAT EPA Region 8 Lab

Lab Phone: 3033127700

Lab #	Sample #	Location	Analyses	Matrix	Collected	Numb Cont	Container	Preservative	MS/MSD
	UASW001	UASW001	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW002	UASW002	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW003	A68	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW004	UASW004	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW005	CC17	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW006	UASW006	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW007	CC18	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW008	UASW008	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW009	UASW009	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW010	UASW010	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW013	UASW013	metals - 200.8 / 200.7	Surface Water	10/27/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW029	A72	metals - 200.8 / 200.7	Surface Water	10/25/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW032	UASW032	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW033	M34	metals - 200.8 / 200.7	Surface Water	10/25/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW034	UASW034	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW035	CC48	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW036	UASW036	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW037	UASW037	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N
	UASW039	UASW039	metals - 200.8 / 200.7	Surface Water	10/26/2010	1	500 mL Poly	HNO3 pH<2	N

**SPECIAL INSTRUCTIONS:** TDF = DG-215  
**TURN AROUND TIME:** 30 days

**START, Denver, CO**

**CHAIN OF CUSTODY RECORD**

Site #: 085M

Contact Name: Andrew Longworth  
Contact Phone: 720 810 0780

No: 085M-10/28/10-0002

Cooper #: 1

Lab: ESAT EPA Region 8 Lab

Lab Phone: 3033127700

Special Instructions: TDF = DG-215  
Turn Around Time = 30 days

**START, Denver, CO**

EPA Contract Number: EP-W-05-050

**CHAIN OF CUSTODY RECORD**

Site #: 085M

Contact Name: Andrew Longworth

Contact Phone: 720-819-9789

No: 085M-11/02/10-0004

Cooler #:

Lab: ESAT EPA Region 8 Lab

Lab Phone: 3033127700

Lab #	CLP Sample #	Sample #	Location	Analyses	Matrix	Collected	Sample Time	Numb Cont	Container	Preservative	MS/MSD
		UAAD001	CC19	Total Metals	Mine Water	10/27/2010	10:05	1	500 mL Poly	HNO3 pH<2	N
		UAAD002	CC06	Total Metals	Mine Water	10/28/2010	13:39	1	500 mL Poly	HNO3 pH<2	N
		UAAD004	CC02D	Metals - Total	Mine Water	10/29/2010	15:00	1	500 mL Poly	HNO3 pH<2	N
		UASW011	UASW011	metals - 200.7	Surface Water	10/28/2010	14:10	1	500 mL Poly	HNO3 pH<2	N
		UASW012	UASW012	metals - 200.7	Surface Water	10/28/2010	14:25	1	500 mL Poly	HNO3 pH<2	N
		UASW014	UASW014	metals - 200.7	Surface Water	10/28/2010	09:45	1	500 mL Poly	HNO3 pH<2	N
		UASW015	CC03D	metals - 200.7	Surface Water	10/28/2010	10:00	1	500 mL Poly	HNO3 pH<2	N
		UASW016	CCOPP-12	metals - 200.7	Surface Water	10/28/2010	10:59	1	500 mL Poly	HNO3 pH<2	N
		UASW017	UASW017	Metals	Surface Water	10/29/2010	11:55	1	500 mL Poly	HNO3 pH<2	N
		UASW018	UASW018	Metals	Surface Water	10/29/2010	13:30	1	500 mL Poly	HNO3 pH<2	N
		UASW019	UASW019	Metals	Surface Water	10/29/2010	12:49	1	500 mL Poly	HNO3 pH<2	N
		UASW020	UASW020	Metals	Surface Water	10/29/2010	13:50	1	500 mL Poly	HNO3 pH<2	N
		UASW022	CC02A	Metals	Surface Water	10/31/2010	11:19	1	500 mL Poly	HNO3 pH<2	N
		UASW023	CC01T	Metals	Surface Water	10/31/2010	11:50	1	500 mL Poly	HNO3 pH<2	N
		UASW024	CC01S	Metals	Surface Water	10/31/2010	12:04	1	500 mL Poly	HNO3 pH<2	N
		UASW030	CC01F	Metals	Surface Water	10/31/2010	13:00	1	500 mL Poly	HNO3 pH<2	N
		UASW059	UASW059	Metals	Surface Water	10/31/2010	12:40	1	500 mL Poly	HNO3 pH<2	N
		UASW099	UASW019	Metals	Surface Water	10/29/2010	12:49	2	500 mL Poly	HNO3 pH<2	Y

Special Instructions: TDF: DG-215 TAT: 30 Days	SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #
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START, Denver, CO

EPA Contract Number: EP-W-05-050

**CHAIN OF CUSTODY RECORD**

Site #: 085M

Contact Name: Andrew Longworth

Contact Phone: 720.810.0780

No: 085M-11/02/10-0004

**Cooler #:**

Lab: ESAT EPA Region 8 Lab

Lab Phone: 3033127700

Special Instructions: TDF: DG-215 TAT: 30 Days	SAMPLES TRANSFERRED FROM CHAIN OF CUSTODY #
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# ESAT Technical Direction Form

Contract No. EPW06033  
EPA Region 8

C101101

085M

Site ID: 085M  
TDF ID: DG-216

Date Issued: 10/26/2010  
Date Updated:

Date  
Closed By:

Name: Upper Animas Mining District Samples

Details: The Contractor shall analyze approximately 70 water samples collected from the Upper Animas Mining District Superfund site beginning approximately 10/25/10. The water samples will be analyzed for TR metals by 200.7 and 200.8 as indicated in the analytical information section below. The samples will be collected by START and delivered to the ESAT R8 Laboratory on approximately 10/29/10. Samples collection and delivery dates are approximate and may change due to site conditions and other factors.

Email data package and EDD to the TOPO and Kent Alexander at UOS START (Kent\_Alexander@urscorp.com).

## Analytical

### MATRIX

Water  Soils  Vegetation  Biota

### WET CHEM

TSS  TDS  DOC  Alk  Chloride  Sulfate  Fluoride  Nitrate  Nitrite

Other

### METALS

Dissolved  Total Recoverable  Total Hardness (Calc)  
200.7:  Ag  Al  As  Ba  Be  B  Ca  Cd  Co  Cr  Cu  Fe  K  Mg  
 Mn  Mo  Na  Ni  Pb  Sb  Se  Sr  Ti  Tl  V  Zn  SiO<sub>2</sub>  
200.8:  Ag  Al  As  Ba  Be  Cd  Co  Cr  Cu  Mn  Mo  Ni  Pb  Sb  
 Se  Th  Tl  U  V  Zn

7470/7471/747  Hg

7470/7471/747

### FIBERS

PLM  TEM

### Deliverable

ID	Description	Due Date	Submission Date
1	Provide final deliverable package to Task Monitor no later than 30 days after delivery of samples.	11/30/2010	



U.S. Environmental Protection Agency  
Region 8  
Technical and Management Services

Laboratory Services Program

Certificate of Analysis

Ref: 8TMS-L

MEMORANDUM

Date: 11/23/10

Subject: Analytical Results--- **Upper Animas - Water - Oct 2010 / DG-216**

From: Don Goodrich; EPA Region 8 Analytical Chemistry WAM

To: Kent Alexander  
Superfund  
1595 Wynkoop Street

Received Sample Set(s), [Work Order : Date Received]:

[ C101101 : 11/03/2010 ]

Attached are the analytical results for the samples received from the Upper Animas - Water - Oct 2010 sampling event, according to TDF DG-216. All analyses were performed within their method specified holding times unless otherwise noted in the following narrative.

These samples were prepared, analyzed, and verified by the Environmental Services Assistance Team Laboratory (ESAT) according to the requirements of the Technical Direction Form (TDF).

Note: The laboratory herewith transmits this deliverable to the program/project partner for determination of "final data usability" which may include data validation and data quality assessment per and in accordance with EPA QA/G-8, *Guidance on Environmental Data Verification and Data Validation*, November 2002, EPA/240/R-02/004. Laboratory data qualifiers are applied based on the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004, referred to as "NFGI".

**Case Narrative****C101101**

Quality Assessment: Unless indicated by exception, the QA/QC associated with this sample set produced data within the TDF-specified criteria.

Holding Times: All samples were analyzed within their method-specified technical holding time(s).

1. Initial and Continuing calibration blanks (ICBs and CCBs).  
Exceptions: In ICP-MS sequences 1011097, 1011102, and 1011108, molybdenum was detected in CCB1 at a level less than twice the PQL. As a result, the reporting limit for molybdenum was raised from 0.20 ug/L to 0.40 ug/L in all bracketed samples. No qualifiers were assigned.
2. Preparation (PB) / Method blanks (MB)  
Exceptions: None.
3. Interference Checks (ICSA / ICSAB) for ICP-MS and ICP-OE analyses only.  
Exceptions: None.
4. Initial and Continuing calibration verification analyses (ICVs and CCVs).  
Exceptions: None.
5. Laboratory Control Sample (LCS) or second source analysis or SRM.  
Exceptions: None.
6. Laboratory Fortified blank (LFB) / Blank spike (BS), same source as used for the matrix spikes.  
PBS performed with analyses/methods requiring preparation or digestion prior to analysis.  
Exceptions: In ICP-MS batch 1011104, molybdenum recovered low (84%) in the blank spike. All sample results for molybdenum were qualified "J" as estimated.
7. Contract Reporting Detection Limit Standard, labeled as CRA, CRDL or CRL.  
Exceptions: None.
8. Laboratory Duplicate (DUP). "Source" identifies field sample duplicated in the laboratory. If either the "source" or the duplicate result is <5X the reporting limit, the %D limit of 20% does not apply.  
Exceptions: None.
9. Laboratory Matrix Spike (MS) and spike duplicate (MSD). "Source" defines original field sample fortified prior to analysis. Percent recovery (%R) limits do not apply when sample concentration(s) exceed the corresponding analyte spike level by a factor of 4 or greater.  
Exceptions: None.
10. Serial Dilution sample analysis (SRD). "Source" is parent field sample diluted 1:5 in the laboratory.  
Performed for ICP-OE and ICP-MS metals analyses. Percent difference (%D) limits do not apply when analyte concentration(s) are below 50x the source sample's MDL (or 10x its PQL).  
Exceptions: In ICP-OE sequence 1011101, potassium recovered slightly high (11% RPD) in SRD2. Since all other QC requirements were met, no qualifiers were assigned.
11. Internal standards, criteria specified for ICP-MS analyses only, monitored at the instrument.  
Exceptions: None.
12. Any calibration using more than two-points produced a correlation coefficient equal to or greater than 0.995.  
Exceptions: None.

**Acronyms and Definitions:**

ESAT	Environmental Services Assistance Team
J	Data Estimated qualifier (also applied to all data less than PQL, greater than or equal to MDL)
MDL	Method Detection Limit
PQL	Practical Quantitation Limit, also known as reporting limit.
RPD	Relative Percent Difference (difference divided by the mean)
%D	Percent difference, serial dilution criteria unit, difference divided by the original result.
%R	Percent recovery, analyzed (less sample contribution) divided by true value
<	Analyte NOT DETECTED at or above the Method Detection Limit (MDL)
mg/L	Parts per million (milligrams per liter). Solids equivalent = mg/Kg.
ug/L	Parts per billion (micrograms per liter). Solids equivalent = ug/Kg.
NR	No Recovery (matrix spike) - Often seen for calcium/magnesium when their concentration exceeds the spike level by > 4x.
NFGI	USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004
RE	Sample Re-analysis. Usually seen on raw data and sequences for required sample dilutions due to over-range analytes.

**Method(s) Summary:**

As defined in the Technical Direction Form (TDF), some or all of the methods listed below were used for the determination of the reported target analytes.

From EPA's *Methods for the Determination of Metals in Environmental Samples*, Supplement I, May 1994, dissolved, total, and/or total recoverable metals were determined by:

- Method 200.7 / 6010B using a PE Optima ICP-OE (ICP).
- Method 200.8 / 6020 using a Perkin-Elmer Elan 6000 ICP-MS.
- Method 200.2 for total recoverable metals (only) digestion.
- Method 245.1 using a Perkin-Elmer FIMS CVAA (aqueous mercury only).

From Standard Methods for the Examination of Water and Wastewater , 18<sup>th</sup> Edition, 1992, Method 2340B was used for the calculated hardness determination. Hardness is reported as mg(milligram) equivalent CaCO<sub>3</sub> per liter (L) determined as follows:

$$\text{Calculated hardness} = 2.497 * (\text{Calcium, mg/L}) + 4.118 * (\text{Magnesium, mg/L}).$$

From EPA's *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846*,

- Method 3015A was used for microwave assisted total metals digestion.
- Method 7473 was used for mercury in solids.

From EPA's *Determination of Inorganic Anions by Ion Chromatography* , Revision 2.1, 1993, Method 300.0 was used to determine the anions.

From EPA's *Methods for Chemical Analysis of Water and Wastes*, March 1983:

- Method 310.1 was followed for the alkalinity determination.
- Method 160.1 was followed for gravimetric total dissolved solids (TDS) determination.
- Method 160.2 was used for gravimetric total suspended solids (TSS) determination.
- Method 415.3 was used for total organic carbon (TOC) determination using either an Apollo 9000 or Phoenix 8000 Non-Dispersive IR (NDIR) system. Also known as dissolved organic carbon (DOC) when performed on the dissolved sample fraction.

The quality control procedures listed in the TDF request were utilized by ESAT to verify accuracy of the results and to evaluate any matrix interferences.

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID:	CC02D	Date / Time Sampled:	10/29/10 15:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-38	Matrix:	Mine Discharge	Lab Number:	C101101-07 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	3300		ug/L	20.0	1	11/23/2010	SW	1011103
200.7	Calcium	211000		ug/L	100	1	11/23/2010	SW	1011103
200.7	Iron	27200		ug/L	100	1	11/23/2010	SW	1011103
200.7	Magnesium	13200		ug/L	100	1	11/23/2010	SW	1011103
200.7	Manganese	29100		ug/L	2.00	1	11/23/2010	SW	1011103
200.7	Potassium	2000		ug/L	250	1	11/23/2010	SW	1011103
200.7	Sodium	6210		ug/L	250	1	11/23/2010	SW	1011103
200.7	Zinc	32700		ug/L	10.0	1	11/23/2010	SW	1011103
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Arsenic	2.72	J	ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/23/2010	SV	1011104
200.8	Beryllium	4.49		ug/L	0.500	5	11/23/2010	SV	1011104
200.8	Cadmium	50.9		ug/L	0.500	5	11/23/2010	SV	1011104
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Cobalt	22.5		ug/L	0.500	5	11/23/2010	SV	1011104
200.8	Copper	20.9		ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Lead	255		ug/L	0.500	5	11/23/2010	SV	1011104
200.8	Molybdenum	1.99	J	ug/L	0.500	5	11/23/2010	SV	1011104
200.8	Nickel	8.30		ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/23/2010	SV	1011104
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/23/2010	SV	1011104
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/23/2010	SV	1011104
2340B	Hardness	582		mg/L	2	1	11/23/2010	SW	1011103

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID:	CC03C	Date / Time Sampled:	10/28/10 10:30	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-37	Matrix:	Mine Discharge	Lab Number:	C101101-09 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	4620		ug/L	20.0	1	11/23/2010	SW	1011103
200.7	Calcium	442000		ug/L	100	1	11/23/2010	SW	1011103
200.7	Iron	101000		ug/L	100	1	11/23/2010	SW	1011103
200.7	Magnesium	28600		ug/L	100	1	11/23/2010	SW	1011103
200.7	Manganese	30500		ug/L	2.00	1	11/23/2010	SW	1011103
200.7	Potassium	1840		ug/L	250	1	11/23/2010	SW	1011103
200.7	Sodium	8530		ug/L	250	1	11/23/2010	SW	1011103
200.7	Zinc	15400		ug/L	10.0	1	11/23/2010	SW	1011103
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Barium	< 100	U	ug/L	50.0	10	11/23/2010	SV	1011104
200.8	Beryllium	6.45		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Cadmium	48.7		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Cobalt	102		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Lead	98.7		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Molybdenum	1.54	J	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Nickel	42.6		ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/23/2010	SV	1011104
2340B	Hardness	1220		mg/L	2	1	11/23/2010	SW	1011103

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID: CC06

Date / Time Sampled: 10/28/10 13:39

Workorder: C101101

EPA Tag No.: No Tag Prefix-36

Matrix: Mine Discharge

Lab Number: C101101-12-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	18300		ug/L	20.0	1	11/23/2010	SW	1011103
200.7	Calcium	395000		ug/L	100	1	11/23/2010	SW	1011103
200.7	Iron	71600		ug/L	100	1	11/23/2010	SW	1011103
200.7	Magnesium	22600		ug/L	100	1	11/23/2010	SW	1011103
200.7	Manganese	27800		ug/L	2.00	1	11/23/2010	SW	1011103
200.7	Potassium	1790		ug/L	250	1	11/23/2010	SW	1011103
200.7	Sodium	5260		ug/L	250	1	11/23/2010	SW	1011103
200.7	Zinc	18600		ug/L	10.0	1	11/23/2010	SW	1011103
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Barium	< 100	U	ug/L	50.0	10	11/23/2010	SV	1011104
200.8	Beryllium	5.98		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Cadmium	53.0		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Cobalt	84.4		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Copper	4210		ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Lead	5.66		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Molybdenum	< 4.00	J	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Nickel	35.4		ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/23/2010	SV	1011104
2340B	Hardness	1080		mg/L	2	1	11/23/2010	SW	1011103

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## Metals (Dissolved) by EPA 200/7000 Series Methods

Station ID: CC19	Date / Time Sampled: 10/27/10 10:05	Workorder: C101101
EPA Tag No.: No Tag Prefix-35	Matrix: Mine Discharge	Lab Number: C101101-17 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	4990		ug/L	20.0	1	11/23/2010	SW	1011103
200.7	Calcium	434000		ug/L	100	1	11/23/2010	SW	1011103
200.7	Iron	133000		ug/L	100	1	11/23/2010	SW	1011103
200.7	Magnesium	29900		ug/L	100	1	11/23/2010	SW	1011103
200.7	Manganese	41700		ug/L	2.00	1	11/23/2010	SW	1011103
200.7	Potassium	1680		ug/L	250	1	11/23/2010	SW	1011103
200.7	Sodium	9080		ug/L	250	1	11/23/2010	SW	1011103
200.7	Zinc	18100		ug/L	10.0	1	11/23/2010	SW	1011103
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Barium	< 100	U	ug/L	50.0	10	11/23/2010	SV	1011104
200.8	Beryllium	3.70		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Cadmium	2.02		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Cobalt	136		ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Lead	1.12	J	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Molybdenum	< 4.00	J	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Nickel	47.8		ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/23/2010	SV	1011104
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/23/2010	SV	1011104
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/23/2010	SV	1011104
2340B	Hardness	1210		mg/L	2	1	11/23/2010	SW	1011103

"J" Qualifier indicates an estimated value

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Received KAA 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: A68  
EPA Tag No.: No Tag Prefix-3Date / Time Sampled: 10/26/10 00:00  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-01 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	86.2		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	54300		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	< 250	U	ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	3290		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	1940		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	614	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	2460		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	449		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	1.82		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	0.790	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	3.63		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	0.843	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	15.4		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*DZSSOLVIA 7/22/11 K-A*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: A72

Date / Time Sampled: 10/25/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix:12

Matrix: Surface Water

Lab Number: C101101-02 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	1300		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	87500		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	8140		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	7330		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	796		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1620		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	5580		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	94.6		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	0.653	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	3.84		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	8.74		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Received 7/22/11 K.A.*Metals (Total Recov) by EPA 200/7000 Series MethodsStation ID: CC01F  
EPA Tag No.: No Tag Prefix-55Date / Time Sampled: 10/31/10 13:00  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-03 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	69.0		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	46200		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	< 250	U	ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	4060		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	120		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	294	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	1230		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	556		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	30.8	J	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	3.09		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	25.2		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	0.620	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Deserves 7/22/11 KSA*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	CC01S	Date / Time Sampled:	10/31/10 12:04	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-54	Matrix:	Surface Water	Lab Number:	C101101-04 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	2180		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	72700		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	< 250	U	ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	9760		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	977		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	561	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	1340		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	3230		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	34.7	J	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	0.968	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	16.9		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	38.6		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	2.21		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	12.1		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**TDF #: DG 216  
*Dissolved 7/22/11 VSA***Metals (Total Recov) by EPA 200/7000 Series Methods**

Station ID: CC01T Date / Time Sampled: 10/31/10 11:50 Workorder: C101101  
 EPA Tag No.: No. Tag Prefix-53 Matrix: Surface Water Lab Number: C101101-05 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	1580		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	55400		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	< 250	U	ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	7020		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	633		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	482	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	1280		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	2750		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	29.1	J	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	13.6		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	102		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	2.03		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	6.06		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 7/22/11 VSA*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: CC02A

Date / Time Sampled: 10/31/10 11:19

Workorder: C101101

EPA Tag No.: No Tag Prefix-52

Matrix: Surface Water

Lab Number: C101101-06 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	1430		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	62000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	< 250	U	ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	8310		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	111		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	634	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	1260		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	3080		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	39.4	J	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	10.9		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	22.3		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	2.54		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	9.47		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**

TDF #:

DG-216

**Metals (Total Recov) by EPA 200/7000 Series Methods**

Station ID:	CC02D	Date / Time Sampled:	10/29/10 15:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-42	Matrix:	Mine Discharge	Lab Number:	C101101-08 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	3330		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	212000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	31900		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	13200		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	28700		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	2040		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	6280		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	31300		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Barium	< 100	U	ug/L	50.0	10	11/18/2010	SV	1011092
200.8	Beryllium	4.82		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Cadmium	55.0		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Cobalt	22.3		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Copper	15.3		ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Lead	271		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Nickel	6.74	J	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #: DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	CC03C	Date / Time Sampled:	10/28/10 10:30	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-41	Matrix:	Mine Discharge	Lab Number:	C101101-10 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	4680		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	441000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	102000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	28700		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	30700		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1860		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	8730		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	15500		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Barium	< 100	U	ug/L	50.0	10	11/18/2010	SV	1011092
200.8	Beryllium	8.40		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Cadmium	53.1		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Cobalt	97.4		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Lead	107		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Nickel	38.2		ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 7/22/11 143A*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	CC03D	Date / Time Sampled:	10/28/10 10:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-46	Matrix:	Surface Water	Lab Number:	C101101-11 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	3040		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	450000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	95200		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	28900		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	31900		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1850		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	8800		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	15500		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Barium	< 100	U	ug/L	50.0	10	11/18/2010	SV	1011092
200.8	Beryllium	6.95		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Cadmium	42.2		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Cobalt	95.9		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Lead	13.1		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Nickel	38.6		ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	CC06	Date / Time Sampled:	10/28/10 13:39	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-40	Matrix:	Mine Discharge	Lab Number:	C101101-13 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed By	Batch
200.7	Aluminum	18500		ug/L	20.0	1	11/18/2010 SW	1011092
200.7	Calcium	398000		ug/L	100	1	11/18/2010 SW	1011092
200.7	Iron	73700		ug/L	100	1	11/18/2010 SW	1011092
200.7	Magnesium	22800		ug/L	100	1	11/18/2010 SW	1011092
200.7	Manganese	28000		ug/L	2.00	1	11/18/2010 SW	1011092
200.7	Potassium	1810		ug/L	250	1	11/18/2010 SW	1011092
200.7	Sodium	5350		ug/L	250	1	11/18/2010 SW	1011092
200.7	Zinc	18700		ug/L	10.0	1	11/18/2010 SW	1011092
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Barium	< 100	U	ug/L	50.0	10	11/18/2010 SV	1011092
200.8	Beryllium	7.03		ug/L	1.00	10	11/18/2010 SV	1011092
200.8	Cadmium	54.9		ug/L	1.00	10	11/18/2010 SV	1011092
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Cobalt	79.1		ug/L	1.00	10	11/18/2010 SV	1011092
200.8	Copper	4030		ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Lead	6.82		ug/L	1.00	10	11/18/2010 SV	1011092
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/18/2010 SV	1011092
200.8	Nickel	31.2		ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/18/2010 SV	1011092
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/18/2010 SV	1011092
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/18/2010 SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Assessors K.A 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: CC17

Date / Time Sampled: 10/27/10 00:00

Workorder: C101101

EPA Tag No.: No. Tag Prefix-5

Matrix: Surface Water

Lab Number: C101101-14 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	720		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	162000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	3230		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	8230		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	1840		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	747	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	3470		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	647		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	2.73		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	7.71		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	8.83		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	0.643	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	0.535	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dec 2010 K+A 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: CC17 DUP Date / Time Sampled: 10/27/10 00:00 Workorder: C101101  
 EPA Tag No.: No Tag Prefix-34 Matrix: Surface Water Lab Number: C101101-15 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	572		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	163000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	3090		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	8340		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	1860		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	752	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	3520		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	661		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	2.41		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	7.36		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	6.50		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**

TDF #:

DG-216

*Dissolved VFA 7/22/11***Metals (Total Recov) by EPA 200/7000 Series Methods**

Station ID:	CC18	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-7	Matrix:	Surface Water	Lab Number:	C101101-16-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	5730		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	450000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	131000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	31400		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	43000		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1740		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	9500		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	18800		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Barium	< 100	U	ug/L	50.0	10	11/18/2010	SV	1011092
200.8	Beryllium	3.54		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Cadmium	2.54		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Cobalt	136		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Lead	1.52	J	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Nickel	46.9		ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: CC19  
EPA Tag No.: No Tag Prefix-39Date / Time Sampled: 10/27/10 10:05  
Matrix: Mine DischargeWorkorder: C101101  
Lab Number: C101101-18 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	5520		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	457000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	144000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	31600		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	44000		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1790		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	9610		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	19100		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Barium	< 100	U	ug/L	50.0	10	11/18/2010	SV	1011092
200.8	Beryllium	4.18		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Cadmium	1.97	J	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Cobalt	133		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Lead	3.70		ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Nickel	46.3		ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/18/2010	SV	1011092
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/18/2010	SV	1011092
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

*Dissolved 7/22/11 16A*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: CC48	Date / Time Sampled: 10/26/10 00:00	Workorder: C101101
EPA Tag No.: No Tag Prefix_16	Matrix: Surface Water	Lab Number: C101101-19 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7890		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	177000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	12000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	10900		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	4580		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	1840		ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	4550		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	2340		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	1.14		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	6.57		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	22.3		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	147		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	17.4		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 2.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	11.0		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Assays KA 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: CC48 DUP

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-33

Matrix: Surface Water

Lab Number: C101101-20-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7870		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	175000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	11700		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	10900		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	4810		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1800		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	4580		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	2500		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	1.30		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	6.45		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	21.6		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	135		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	19.0		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	9.52		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: ~~Upper Animas - Water~~ - Oct 2010**Certificate of Analysis**

TDF #: DG-216

*Assay Lab 7/22/11 VAF***Metals (Total Recov) by EPA 200/7000 Series Methods**

Station ID:	CCOPP-12	Date / Time Sampled:	10/28/10 10:59	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-47	Matrix:	Surface Water	Lab Number:	C101101-21 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	2480		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	87800		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	210	J	ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	6010		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	3000		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	532	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	2890		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	4640		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	13.7		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	1.83		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	140		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	7.42		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	3.23	J	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 16A 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	M34	Date / Time Sampled:	10/25/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-14	Matrix:	Surface Water	Lab Number:	C101101-22-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	381		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	57500		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	2800		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	4860		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	327		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	629	J	ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	3300		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	185		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	0.926	J	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	3.75		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	1.23		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved Trace 15A*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW001

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix

Matrix: Surface Water

Lab Number: C101101-23 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7330		ug/L	20.0	1	11/18/2010	SW	1011092
200.7	Calcium	169000		ug/L	100	1	11/18/2010	SW	1011092
200.7	Iron	10800		ug/L	100	1	11/18/2010	SW	1011092
200.7	Magnesium	10400		ug/L	100	1	11/18/2010	SW	1011092
200.7	Manganese	4760		ug/L	2.00	1	11/18/2010	SW	1011092
200.7	Potassium	1700		ug/L	250	1	11/18/2010	SW	1011092
200.7	Sodium	4450		ug/L	250	1	11/18/2010	SW	1011092
200.7	Zinc	2410		ug/L	10.0	1	11/18/2010	SW	1011092
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/18/2010	SV	1011092
200.8	Beryllium	1.17		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Cadmium	6.19		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Cobalt	20.4		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Copper	121		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Lead	17.8		ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Nickel	8.46		ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/18/2010	SV	1011092
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/18/2010	SV	1011092
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/18/2010	SV	1011092

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

*Dissolved KSA 7/22/11*  
Metals (Total Recov) by EPA 200/7000 Series MethodsStation ID: UASW002  
EPA Tag No.: No Tag Prefix-2Date / Time Sampled: 10/26/10 00:00  
Matrix: Surface WaterWorkOrder: C101101  
Lab Number: C101101-24 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7810		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	175000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	11500		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	10900		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	4650		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	1790		ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	4540		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	2370		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	0.826	J	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	6.55		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	23.7		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	148		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	17.8		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	1.04	J	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	10.6		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	0.953	J	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	5.61		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*02/2010 BA-712211*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW004	Date/Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-4	Matrix:	Surface Water	Lab Number:	C101101-25 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	5130		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	202000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	16200		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	13100		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	10100		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	933	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	4480		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	5510		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	2.28		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	16.1		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	33.0		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	398		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	25.0		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	14.7		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

Metals (Total Recov) by EPA 200/7000 Series Methods  
*Dickens KA 7/22/11*

Station ID:	UASW006	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-6	Matrix:	Surface Water	Lab Number:	C101101-26 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	9160		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	258000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	32500		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	18200		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	18500		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	987	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	5630		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	10700		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	3.61		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	30.3		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	59.4		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	796		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	44.8		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	24.8		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dawson K.A 7/22/11*  
Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW008	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-8	Matrix:	Surface Water	Lab Number:	C101101-27 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7940		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	238000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	30000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	16100		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	14800		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	926	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	5100		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	9230		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	2.88		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	28.7		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	46.6		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	884		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	19.3		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	20.8		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 7/22/11 LA*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW009	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-9	Matrix:	Surface Water	Lab Number:	C101101-28 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed By	Batch
200.7	Aluminum	7030		ug/L	20.0	1	11/22/2010 SW	1011093
200.7	Calcium	230000		ug/L	100	1	11/22/2010 SW	1011093
200.7	Iron	31400		ug/L	100	1	11/22/2010 SW	1011093
200.7	Magnesium	15600		ug/L	100	1	11/22/2010 SW	1011093
200.7	Manganese	14800		ug/L	2.00	1	11/22/2010 SW	1011093
200.7	Potassium	899	J	ug/L	250	1	11/22/2010 SW	1011093
200.7	Sodium	4820		ug/L	250	1	11/22/2010 SW	1011093
200.7	Zinc	9350		ug/L	10.0	1	11/22/2010 SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010 SV	1011093
200.8	Beryllium	3.57		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Cadmium	29.1		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Cobalt	49.2		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Copper	909		ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Lead	14.6		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Nickel	328		ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010 SV	1011093

Project Name: Upper Animas - Water - Oct 2010

TDF #: DG-216

*Dissolved test 7/22/11*  
Metals (Total Recov) by EPA 200/7000 Series Methods

## Certificate of Analysis

Station ID: UASW010  
EPA Tag No.: No Tag Prefix-10Date/Time Sampled: 10/27/10 00:00  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-29 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	23500		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	348000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	52900		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	24800		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	23700		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	1430		ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	5140		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	16200		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Barium	< 100	U	ug/L	50.0	10	11/22/2010	SV	1011093
200.8	Beryllium	6.34		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Cadmium	63.7		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Cobalt	83.1		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Copper	4230		ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Lead	5.93		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Nickel	39.3		ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Assured Total Recov*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW011	Date/Time Sampled: 10/28/10 14:10	Workorder: C101101
EPA Tag No.: No Tag Prefix-43	Matrix: Surface Water	Lab Number: C101101-30-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	18100		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	388000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	66700		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	22300		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	26000		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	1790		ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	5240		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	17100		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Barium	< 100	U	ug/L	50.0	10	11/22/2010	SV	1011093
200.8	Beryllium	7.06		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Cadmium	53.3		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Cobalt	81.4		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Copper	4580		ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Lead	5.66		ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Nickel	35.8		ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/22/2010	SV	1011093
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011093
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/22/2010	SV	1011093

TDF #: DG-216

~~Metals (Total Recov)~~ by EPA 200/7000 Series Methods

Station ID:	UASW012	Date / Time Sampled:	10/28/10 14:25	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-44	Matrix:	Surface Water	Lab Number:	C101101-31 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed By	Batch
200.7	Aluminum	3820		ug/L	20.0	1	11/22/2010 SW	1011093
200.7	Calcium	52500		ug/L	100	1	11/22/2010 SW	1011093
200.7	Iron	< 250	U	ug/L	100	1	11/22/2010 SW	1011093
200.7	Magnesium	7230		ug/L	100	1	11/22/2010 SW	1011093
200.7	Manganese	742		ug/L	2.00	1	11/22/2010 SW	1011093
200.7	Potassium	545	J	ug/L	250	1	11/22/2010 SW	1011093
200.7	Sodium	2040		ug/L	250	1	11/22/2010 SW	1011093
200.7	Zinc	924		ug/L	10.0	1	11/22/2010 SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010 SV	1011093
200.8	Beryllium	0.595	J	ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Cadmium	4.69		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Chromium	2.56	J	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Cobalt	7.94		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Copper	291		ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Lead	4.50		ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Nickel	5.44		ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010 SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010 SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010 SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Assays vs A 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW013	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-11	Matrix:	Surface Water	Lab Number:	C101101-32 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	3550		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	210000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	27700		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	14000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	12800		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	874	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	4980		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	7890		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	2.73		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	22.0		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	36.3		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	128		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	13.3		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	16.3		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW014

Date / Time Sampled: 10/28/10 09:45

Workorder: C101101

EPA Tag No.: No Tag Prefix-45

Matrix: Surface Water

Lab Number: C101101-33 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	4980		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	231000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	30600		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	15700		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	14900		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	920	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	5430		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	8770		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	3.03		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	25.8		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	46.0		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	121		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	16.1		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	20.2		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*15A Datascan 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW017

Date / Time Sampled: 10/29/10 11:55

Workorder: C101101

EPA Tag No.: No Tag Prefix-48

Matrix: Surface Water

Lab Number: C101101-34-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	2570		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	81400		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	186	J	ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	6280		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	3370		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	568	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	2610		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	4910		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	1.08		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	15.8		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	2.34		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	201		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	12.6		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	4.23	J	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

DZSawano K-A 7/22/11

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW018

Date / Time Sampled: 10/29/10 13:30

Workorder: C101101

EPA Tag No.: No Tag Prefix-49

Matrix: Surface Water

Lab Number: C101101-35 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	2830		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	71600		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	413		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	6880		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	4040		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	593	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	2190		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	5950		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	0.760	J	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	19.2		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	3.02		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	240		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	11.9		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	5.71		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved by A 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW019	Date / Time Sampled:	10/29/10 12:49	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-50	Matrix:	Surface Water	Lab Number:	C101101-36-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	10100		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	174000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	4460		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	13600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	21900		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1420		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	5520		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	27600		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	3.80		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	72.8		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	22.6		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	820		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	75.6		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	13.6		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

~~Assured QA 7/22/11~~

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW019 DUP	Date / Time Sampled:	10/29/10 12:49	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-57	Matrix:	Surface Water	Lab Number:	C101101-37 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	10200		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	174000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	4570		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	13700		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	22000		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	1440		ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	5560		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	27700		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	3.96		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	74.2		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	22.6		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	848		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	76.6		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	13.7		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

*DISCOVERED 11/22/11 16A*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW020

Date / Time Sampled: 10/29/10 13:50

Workorder: C101101

EPA Tag No.: No Tag Prefix-51

Matrix: Surface Water

Lab Number: C101101-38 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	996		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	45100		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	< 250	U	ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	5520		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	306		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	462	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	1150		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	1920		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	8.88		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	91.1		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	4.01		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	4.42	J	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

~~Dissolved K-A 7/22/11~~  
Metals (Total Recov) by EPA 200/7000 Series MethodsStation ID: UASW021  
EPA Tag No.: No Tag Prefix-58Date / Time Sampled: 10/31/10 11:10  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-39 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	1520		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	55900		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	< 250	U	ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	7150		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	550		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	517	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	1260		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	2550		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	26.3	J	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	0.649	J	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	12.0		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	105		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	2.62		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	6.43		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas -Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

~~Dissolved LA 7/22/11~~

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW032 Date / Time Sampled: 10/26/10 00:00 Workorder: C101101  
 EPA Tag No.: No Tag Prefix-13 Matrix: Surface Water Lab Number: C101101-40-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	275		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	76900		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	2630		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	5720		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	1270		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	856	J	ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	3570		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	558		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	1.76		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	6.34		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	13.9		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

Dissolved Hg2+ K3A

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW034

Date/Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-15

Matrix: Surface Water

Lab Number: C101101-41 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	530		ug/L	20.0	1	11/22/2010	SW	1011093
200.7	Calcium	91000		ug/L	100	1	11/22/2010	SW	1011093
200.7	Iron	1980		ug/L	100	1	11/22/2010	SW	1011093
200.7	Magnesium	5630		ug/L	100	1	11/22/2010	SW	1011093
200.7	Manganese	2560		ug/L	2.00	1	11/22/2010	SW	1011093
200.7	Potassium	1010		ug/L	250	1	11/22/2010	SW	1011093
200.7	Sodium	3150		ug/L	250	1	11/22/2010	SW	1011093
200.7	Zinc	1030		ug/L	10.0	1	11/22/2010	SW	1011093
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011093
200.8	Beryllium	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Cadmium	2.96		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Cobalt	7.33		ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Copper	26.1		ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Lead	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Molybdenum	0.670	J	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Nickel	2.96	J	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011093
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011093
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011093

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dzsoaves Kest 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW036

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-17

Matrix: Surface Water

Lab Number: C101101-42 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7800		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	171000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	12200		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	10600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	4390		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1780		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4460		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	2260		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	0.910	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	5.87		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	23.5		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	146		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	18.9		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	0.900	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	11.7		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	0.891	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	6.35		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved KSA 712211*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW037  
EPA Tag No.: No Tag Prefix-18Date / Time Sampled: 10/26/10 00:00  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-43 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7580		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	172000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	14800		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	10900		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5280		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1580		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4310		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	2800		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	0.986	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	7.38		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	24.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	175		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	22.4		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	0.557	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	11.5		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	4.02	J	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Assessed by A 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW039  
EPA Tag No.: No Tag Prefix-19Date / Time Sampled: 10/26/10 00:00  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-44-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8320		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	165000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	17600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11300		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5610		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1680		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4090		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3000		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	0.925	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	7.47		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	27.3		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	184		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	25.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	12.7		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	2.77	J	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved K/A 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW040

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-20

Matrix: Surface Water

Lab Number: C101101-45 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	17100		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	57800		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	32700		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	12600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5010		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1300		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	2180		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	.1070		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.72		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	4.41		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	59.1		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	229		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	95.6		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	33.2		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

~~Received by 7/26/11~~  
Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW041	Date / Time Sampled:	10/26/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-21	Matrix:	Surface Water	Lab Number:	C101101-46 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8090		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	171000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	17200		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11300		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5710		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1680		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4150		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3090		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.58		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	8.71		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	26.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	184		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	24.5		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	12.9		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Jessica vs KA 11/22/11*  
Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW042

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-22

Matrix: Surface Water

Lab Number: C101101-47-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	7870		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	175000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	17100		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5900		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1650		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4280		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3160		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.36		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	8.14		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	25.6		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	191		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	24.1		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	12.2		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved K2A 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW043  
EPA Tag No.: No Tag Prefix-23Date / Time Sampled: 10/26/10 00:00  
Matrix: Surface WaterWorkorder: C101101  
Lab Number: C101101-48 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	225		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	304000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	19300		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	18900		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	8020		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	2450		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	9620		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	2450		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Arsenic	< 20.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Barium	< 100	U	ug/L	50.0	10	11/22/2010	SV	1011094
200.8	Beryllium	1.31	J	ug/L	1.00	10	11/22/2010	SV	1011094
200.8	Cadmium	2.10		ug/L	1.00	10	11/22/2010	SV	1011094
200.8	Chromium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Cobalt	34.9		ug/L	1.00	10	11/22/2010	SV	1011094
200.8	Copper	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Lead	< 2.00	U	ug/L	1.00	10	11/22/2010	SV	1011094
200.8	Molybdenum	< 2.00	U	ug/L	1.00	10	11/22/2010	SV	1011094
200.8	Nickel	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Selenium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Silver	< 5.00	U	ug/L	1.00	10	11/22/2010	SV	1011094
200.8	Thallium	< 10.0	U	ug/L	5.00	10	11/22/2010	SV	1011094
200.8	Vanadium	< 20.0	U	ug/L	10.0	10	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved K&A 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW044

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-24

Matrix: Surface Water

Lab Number: C101101-49 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8150		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	167000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	18200		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11200		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5750		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1650		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4030		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3210		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.32		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	9.09		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	28.9		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	212		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	26.0		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	14.9		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

*Dissolved vs A 7/22/11*  
Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW045

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-25

Matrix: Surface Water

Lab Number: C101101-50 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	4280		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	52700		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	268		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	9690		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	1620		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	714	J	ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	1620		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	907		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	29.0	J	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.05		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	3.79		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	20.6		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	150		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	9.44		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	13.6		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved K&A 7/22/11*Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW046	Date / Time Sampled:	10/26/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-26	Matrix:	Surface Water	Lab Number:	C101101-51 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8340		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	170000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	20000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11300		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5780		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1660		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4030		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3230		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.52		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	8.60		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	28.2		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	212		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	24.8		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	13.2		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Desolved KGA 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW047

Date/Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-27

Matrix: Surface Water

Lab Number: C101101-52-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8450		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	170000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	21800		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11400		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	5860		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1680		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	3990		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3320		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	3.51	J	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.44		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	8.99		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	29.4		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	225		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	24.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	14.4		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

Dissolved RGA 712211  
Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID: UASW049

Date / Time Sampled: 10/26/10 00:00

Workorder: C101101

EPA Tag No.: No Tag Prefix-28

Matrix: Surface Water

Lab Number: C101101-53 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8900		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	171000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	24100		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11800		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	6180		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1720		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	3870		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3510		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	5.00	J	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.27		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	9.51		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	29.8		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	239		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	25.4		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	15.3		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved KsA 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW050	Date / Time Sampled:	10/26/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-29	Matrix:	Surface Water	Lab Number:	C101101-54-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	8830		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	169000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	23900		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	11700		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	6240		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1700		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	3810		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	3560		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	4.63	J	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.50		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	9.70		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	28.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	235		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	25.3		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	15.2		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**

TDF #:

DG-216

*Described KA 7/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW054	Date / Time Sampled:	10/26/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-30	Matrix:	Surface Water	Lab Number:	C101101-55 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	14400		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	35400		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	27600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	7560		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	826		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	2130		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	1230		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	1350		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	17.0		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	0.726	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	5.33		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	26.1		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	190		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	57.3		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	19.6		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 1/24 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW056	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-31	Matrix:	Surface Water	Lab Number:	C101101-56 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	5440		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	178000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	16000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	12200		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	8750		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1100		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4280		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	4850		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.75		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	12.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	30.4		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	355		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	26.8		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	12.2		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Dissolved 1/2 A 7/22/11*

## Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW058	Date / Time Sampled:	10/27/10 00:00	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-32	Matrix:	Surface Water	Lab Number:	C101101-57 A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	5510		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	182000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	15900		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	12600		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	9150		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	1070		ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	4370		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	5130		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	< 10.0	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	1.52		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	13.7		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	30.4		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	366		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	27.9		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	12.6		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

*Resources 12A 11/22/11*

Metals (Total Recov) by EPA 200/7000 Series Methods

Station ID:	UASW059	Date / Time Sampled:	10/31/10 12:40	Workorder:	C101101
EPA Tag No.:	No Tag Prefix-56	Matrix:	Surface Water	Lab Number:	C101101-58-A

Method	Parameter	Results	Qualifier	Units	MDL	Dilution Factor	Analyzed	By	Batch
200.7	Aluminum	13200		ug/L	20.0	1	11/22/2010	SW	1011094
200.7	Calcium	17400		ug/L	100	1	11/22/2010	SW	1011094
200.7	Iron	46400		ug/L	100	1	11/22/2010	SW	1011094
200.7	Magnesium	12000		ug/L	100	1	11/22/2010	SW	1011094
200.7	Manganese	8740		ug/L	2.00	1	11/22/2010	SW	1011094
200.7	Potassium	362	J	ug/L	250	1	11/22/2010	SW	1011094
200.7	Sodium	626		ug/L	250	1	11/22/2010	SW	1011094
200.7	Zinc	24900		ug/L	10.0	1	11/22/2010	SW	1011094
200.8	Antimony	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Arsenic	26.9		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Barium	< 50.0	U	ug/L	25.0	5	11/22/2010	SV	1011094
200.8	Beryllium	0.940	J	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Cadmium	105		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Chromium	5.46		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Cobalt	25.6		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Copper	4690		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Lead	33.8		ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Molybdenum	< 1.00	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Nickel	16.4		ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Selenium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Silver	< 2.50	U	ug/L	0.500	5	11/22/2010	SV	1011094
200.8	Thallium	< 5.00	U	ug/L	2.50	5	11/22/2010	SV	1011094
200.8	Vanadium	< 10.0	U	ug/L	5.00	5	11/22/2010	SV	1011094

"J" Qualifier indicates an estimated value

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**

TDF #: DG-216

**Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control****TechLaw, Inc. - ESAT Region 8**

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
<b>ICPMS-PE DRC-II</b>									
Batch 1011104 - No Prep Req		<i>Water</i>							<b>ICPMS-PE DRC-II</b>
<b>Method Blank (1011104-BLK1)</b>		Dilution Factor: 1							Prepared & Analyzed: 11/23/10
Beryllium	< 0.100	0.200	ug/L						
Vanadium	< 1.00	2.00	"						
Chromium	< 0.500	1.00	"						
Cobalt	< 0.100	0.200	"						
Nickel	< 0.500	1.00	"						
Copper	< 0.500	1.00	"						
Arsenic	< 0.500	2.00	"						
Selenium	< 0.500	1.00	"						
Molybdenum	0.107	0.200	"						
Silver	< 0.100	0.500	"						
Cadmium	< 0.100	0.200	"						
Antimony	< 0.500	1.00	"						
Barium	< 5.00	10.0	"						
Thallium	< 0.500	1.00	"						
Lead	< 0.100	0.200	"						
<b>Method Blank Spike (1011104-BS1)</b>		Dilution Factor: 1							Prepared & Analyzed: 11/23/10
Beryllium	97.2	0.200	ug/L	100	97	85-115			
Vanadium	92.1	2.00	"	100	92	85-115			
Chromium	93.6	1.00	"	100	94	85-115			
Cobalt	94.8	0.200	"	100	95	85-115			
Nickel	91.8	1.00	"	100	92	85-115			
Copper	91.8	1.00	"	100	92	85-115			
Arsenic	101	2.00	"	100	101	85-115			
Selenium	479	1.00	"	500	96	85-115			
Molybdenum	84.2	0.400	"	100	84	85-115			
Silver	93.0	0.500	"	100	93	85-115			
Cadmium	91.0	0.200	"	100	91	85-115			
Antimony	94.6	1.00	"	100	95	85-115			
Barium	97.1	10.0	"	100	97	85-115			
Thallium	100	1.00	"	100	100	85-115			
Lead	98.5	0.200	"	100	98	85-115			

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DG-216

## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011104 - No Prep Req		<i>Water</i>							ICPMS-PE DRC-II
Duplicate (1011104-DUP1)		Dilution Factor: 5	Source: C101101-07		Prepared & Analyzed: 11/23/10				
Beryllium	3.97	1.00	ug/L		4.49			12	20
Vanadium	< 5.00	10.0	"		< 5.00				20
Chromium	< 2.50	5.00	"		< 2.50				20
Cobalt	21.9	1.00	"		22.5			3	20
Nickel	7.94	5.00	"		8.30			4	20
Copper	20.3	5.00	"		20.9			3	20
Arsenic	< 2.50	10.0	"		2.72				20
Selenium	< 2.50	5.00	"		< 2.50				20
Molybdenum	0.630	2.00	"		1.99			104	20
Silver	< 0.500	2.50	"		< 0.500				20
Cadmium	50.9	1.00	"		50.9			0.05	20
Antimony	< 2.50	5.00	"		< 2.50				20
Barium	< 25.0	50.0	"		< 25.0				20
Thallium	< 2.50	5.00	"		< 2.50				20
Lead	258	1.00	"		255			1	20
Matrix Spike (1011104-MS1)		Dilution Factor: 5	Source: C101101-07		Prepared & Analyzed: 11/23/10				
Beryllium	92.5	1.00	ug/L	100	4.49	88	75-125		
Vanadium	86.8	10.0	"	100	< 5.00	87	75-125		
Chromium	89.0	5.00	"	100	< 2.50	89	75-125		
Cobalt	111	1.00	"	100	22.5	88	75-125		
Nickel	92.6	5.00	"	100	8.30	84	75-125		
Copper	109	5.00	"	100	20.9	88	75-125		
Arsenic	97.2	10.0	"	100	2.72	95	75-125		
Selenium	453	5.00	"	500	< 2.50	91	75-125		
Molybdenum	86.5	2.00	"	100	1.99	85	75-125		
Silver	85.4	2.50	"	100	< 0.500	85	75-125		
Cadmium	138	1.00	"	100	50.9	87	75-125		
Antimony	91.7	5.00	"	100	< 2.50	92	75-125		
Barium	93.0	50.0	"	100	< 25.0	93	75-125		
Thallium	104	5.00	"	100	< 2.50	104	75-125		
Lead	346	1.00	"	100	255	91	75-125		

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## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011104 - No Prep Req		Water					ICPMS-PE DRC-II		
Matrix Spike Dup (1011104-MSD1)		Dilution Factor: 5		Source: C101101-07			Prepared & Analyzed: 11/23/10		
Beryllium	96.1	1.00	ug/L	100	4.49	92	75-125	4	20
Vanadium	90.2	10.0	"	100	< 5.00	90	75-125	4	20
Chromium	93.3	5.00	"	100	< 2.50	93	75-125	5	20
Cobalt	117	1.00	"	100	22.5	95	75-125	5	20
Nickel	98.0	5.00	"	100	8.30	90	75-125	6	20
Copper	118	5.00	"	100	20.9	97	75-125	8	20
Arsenic	112	10.0	"	100	2.72	109	75-125	14	20
Selenium	489	5.00	"	500	< 2.50	98	75-125	8	20
Molybdenum	90.5	2.00	"	100	1.99	89	75-125	5	20
Silver	88.5	2.50	"	100	< 0.500	89	75-125	4	20
Cadmium	148	1.00	"	100	50.9	97	75-125	7	20
Antimony	95.4	5.00	"	100	< 2.50	95	75-125	4	20
Barium	95.2	50.0	"	100	< 25.0	95	75-125	2	20
Thallium	107	5.00	"	100	< 2.50	107	75-125	3	20
Lead	355	1.00	"	100	255	100	75-125	2	20
Batch 1011108 - 1011104		Water					ICPMS-PE DRC-II		
Serial Dilution (1011108-SRD1)		Dilution Factor: 2		Source: C101101-07			Prepared & Analyzed: 11/23/10		
Beryllium	2.86	5.00	ug/L		4.49			44	10
Vanadium	< 2.50	5.00	"		< 0.50				10
Chromium	< 2.50	5.00	"		< 0.50				10
Cobalt	22.8	5.00	"		22.5			1	10
Nickel	7.59	5.00	"		8.30			9	10
Copper	25.7	5.00	"		20.9			20	10
Arsenic	3.19	5.00	"		2.72			16	10
Selenium	< 2.50	5.00	"		< 0.50				10
Molybdenum	< 2.50	10.0	"		1.99				10
Silver	< 2.50	5.00	"		< 0.50				10
Cadmium	49.1	5.00	"		50.9			4	10
Antimony	< 2.50	5.00	"		< 0.50				10
Barium	10.2	5.00	"		< 0.50				10
Thallium	< 2.50	5.00	"		< 0.50				10
Lead	257	5.00	"		255			0.6	10

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## Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
<b>ICPOE - PE Optima</b>									
Batch 1011103 - No Prep Req									
<b>Water</b>									
<b>ICPOE - PE Optima</b>									
<b>Method Blank (1011103-BLK1)</b>		Dilution Factor: 1				Prepared & Analyzed: 11/23/10			
Aluminum	<20.0	50.0	ug/L						
Calcium	< 100	250	"						
Iron	< 100	250	"						
Potassium	< 250	1000	"						
Magnesium	< 100	250	"						
Manganese	< 2.00	5.00	"						
Sodium	< 250	500	"						
Zinc	< 10.0	20.0	"						
<b>Method Blank Spike (1011103-BS1)</b>		Dilution Factor: 1				Prepared & Analyzed: 11/23/10			
Aluminum	10340	50.0	ug/L	10100		102	85-115		
Calcium	10160	250	"	10100		101	85-115		
Iron	10190	250	"	10100		101	85-115		
Potassium	10230	1000	"	10100		101	85-115		
Magnesium	10270	250	"	10100		102	85-115		
Manganese	99.99	5.00	"	100		100	85-115		
Sodium	10310	500	"	10100		102	85-115		
Zinc	97.32	20.0	"	100		97	85-115		
<b>Duplicate (1011103-DUP1)</b>		Dilution Factor: 1		Source: C101101-07		Prepared & Analyzed: 11/23/10			
Aluminum	3275	50.0	ug/L	3296		0.7	20		
Calcium	210000	250	"	211400		0.7	20		
Iron	26810	250	"	27210		1	20		
Potassium	1990	1000	"	1996		0.3	20		
Magnesium	13120	250	"	13200		0.6	20		
Manganese	28340	5.00	"	29130		3	20		
Sodium	6172	500	"	6212		0.6	20		
Zinc	31520	20.0	"	32720		4	20		

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Metals (Dissolved) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011103 - No Prep Req		Water						ICPOE - PE Optima	
Matrix Spike (1011103-MS1)		Dilution Factor: 1						Prepared & Analyzed: 11/23/10	
Aluminum	13810	50.0	ug/L	10100	3296	104	75-125		
Calcium	216700	250	"	10100	211400	52	75-125		
Iron	36580	250	"	10100	27210	93	75-125		
Potassium	12530	1000	"	10100	1996	104	75-125		
Magnesium	23350	250	"	10100	13200	101	75-125		
Manganese	27700	5.00	"	100	29130	NR	75-125		
Sodium	16870	500	"	10100	6212	105	75-125		
Zinc	30250	20.0	"	100	32720	NR	75-125		
Matrix Spike Dup (1011103-MSD1)		Dilution Factor: 1						Prepared & Analyzed: 11/23/10	
Aluminum	13840	50.0	ug/L	10100	3296	104	75-125	0.2	20
Calcium	217200	250	"	10100	211400	57	75-125	0.2	20
Iron	36950	250	"	10100	27210	96	75-125	1	20
Potassium	12590	1000	"	10100	1996	105	75-125	0.4	20
Magnesium	23410	250	"	10100	13200	101	75-125	0.3	20
Manganese	27630	5.00	"	100	29130	NR	75-125	0.3	20
Sodium	16870	500	"	10100	6212	105	75-125	0.01	20
Zinc	30470	20.0	"	100	32720	NR	75-125	0.7	20
Batch 1011107 - 1011103		Water						ICPOE - PE Optima	
Serial Dilution (1011107-SRD1)		Dilution Factor: 5						Prepared & Analyzed: 11/23/10	
Aluminum	3139	250	ug/L		3296			5	10
Calcium	202700	1250	"		211400			4	10
Iron	26650	1250	"		27210			2	10
Potassium	1916	5000	"		1996			4	10
Magnesium	12680	1250	"		13200			4	10
Manganese	29070	25.0	"		29130			0.2	10
Sodium	5869	2500	"		6212			6	10
Zinc	31000	100	"		32720			5	10

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.

RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
<b>ICPMS-PE DRC-II</b>									
Batch 1011092 - 200.2 - TR Metals			<i>Water</i>						
<b>Method Blank (1011092-BLK2)</b>			Dilution Factor: 5						
Beryllium	< 0.500	1.00	ug/L						
Vanadium	< 5.00	10.0	"						
Chromium	< 2.50	5.00	"						
Cobalt	< 0.500	1.00	"						
Nickel	< 2.50	5.00	"						
Copper	< 2.50	5.00	"						
Arsenic	< 2.50	10.0	"						
Selenium	< 2.50	5.00	"						
Molybdenum	< 0.500	2.00	"						
Silver	< 0.500	2.50	"						
Cadmium	0.5762	1.00	"						
Antimony	< 2.50	5.00	"						
Barium	< 25.0	50.0	"						
Thallium	< 2.50	5.00	"						
Lead	< 0.500	1.00	"						
<b>Duplicate (1011092-DUP2)</b>			Dilution Factor: 5						
			Source: C101101-14						
Beryllium	< 0.500	1.00	ug/L	< 0.500					20
Vanadium	< 5.00	10.0	"	< 5.00					20
Chromium	< 2.50	5.00	"	< 2.50					20
Cobalt	8.191	1.00	"	7.713				6	20
Nickel	< 2.50	5.00	"	< 2.50					20
Copper	8.373	5.00	"	8.831				5	20
Arsenic	< 2.50	10.0	"	< 2.50					20
Selenium	< 2.50	5.00	"	< 2.50					20
Molybdenum	< 0.500	2.00	"	0.5349					20
Silver	< 0.500	2.50	"	< 0.500					20
Cadmium	2.604	1.00	"	2.728				5	20
Antimony	< 2.50	5.00	"	< 2.50					20
Barium	< 25.0	50.0	"	< 25.0					20
Thallium	< 2.50	5.00	"	< 2.50					20
Lead	0.6780	1.00	"	0.6430				5	20

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011092 - 200.2 - TR Metals		<i>Water</i>						ICPMS-PE DRC-II	
Matrix Spike (1011092-MS2)		Dilution Factor: 5      Source: C101101-14						Prepared: 11/15/10 Analyzed: 11/18/10	
Beryllium	177.0	1.00	ug/L	200	< 0.500	89	75-125		
Vanadium	263.9	10.0	"	300	< 5.00	88	75-125		
Chromium	355.5	5.00	"	400	< 2.50	89	75-125		
Cobalt	188.1	1.00	"	200	7.713	90	75-125		
Nickel	445.9	5.00	"	500	< 2.50	89	75-125		
Copper	286.4	5.00	"	300	8.831	93	75-125		
Arsenic	744.0	10.0	"	800	< 2.50	93	75-125		
Selenium	1949	5.00	"	2000	< 2.50	97	75-125		
Molybdenum	368.2	2.00	"	400	0.5349	92	75-125		
Silver	70.52	2.50	"	75.0	< 0.500	94	75-125		
Cadmium	187.1	1.00	"	200	2.728	92	75-125		
Antimony	759.7	5.00	"	800	< 2.50	95	75-125		
Barium	200.4	50.0	"	200	< 25.0	100	75-125		
Thallium	2008	5.00	"	2000	< 2.50	100	75-125		
Lead	1042	1.00	"	1000	0.6430	104	75-125		
Matrix Spike Dup (1011092-MSD2)		Dilution Factor: 5      Source: C101101-14						Prepared: 11/15/10 Analyzed: 11/18/10	
Beryllium	176.8	1.00	ug/L	200	< 0.500	88	75-125	0.1	20
Vanadium	280.2	10.0	"	300	< 5.00	93	75-125	6	20
Chromium	371.0	5.00	"	400	< 2.50	93	75-125	4	20
Cobalt	193.6	1.00	"	200	7.713	93	75-125	3	20
Nickel	462.2	5.00	"	500	< 2.50	92	75-125	4	20
Copper	287.2	5.00	"	300	8.831	93	75-125	0.3	20
Arsenic	792.8	10.0	"	800	< 2.50	99	75-125	6	20
Selenium	2014	5.00	"	2000	< 2.50	101	75-125	3	20
Molybdenum	381.7	1.50	"	400	0.5349	95	75-125	4	20
Silver	73.69	2.50	"	75.0	< 0.500	98	75-125	4	20
Cadmium	196.4	1.00	"	200	2.728	97	75-125	5	20
Antimony	787.5	5.00	"	800	< 2.50	98	75-125	4	20
Barium	210.1	50.0	"	200	< 25.0	105	75-125	5	20
Thallium	2152	5.00	"	2000	< 2.50	108	75-125	7	20
Lead	1102	1.00	"	1000	0.6430	110	75-125	6	20

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011092 - 200.2 - TR Metals		<i>Water</i>						ICPMS-PE DRC-II	
Post Spike (1011092-PS2)		Dilution Factor: 5		Source: C101101-14		Prepared: 11/15/10 Analyzed: 11/18/10			
Beryllium	102.5		ug/L	100	0.3816	102	80-120		
Vanadium	90.14		"	100	-1.244	91	80-120		
Chromium	89.70		"	100	0.8659	89	80-120		
Cobalt	99.09		"	100	7.713	91	80-120		
Nickel	91.94		"	100	0.8844	91	80-120		
Copper	97.31		"	100	8.831	88	80-120		
Arsenic	102.0		"	100	-0.7292	103	80-120		
Selenium	509.7		"	500	0.4750	102	80-120		
Molybdenum	97.33		"	100	0.5349	97	80-120		
Silver	101.2		"	100	0.2548	101	80-120		
Cadmium	102.3		"	100	2.728	100	80-120		
Antimony	100.6		"	100	0.04570	101	80-120		
Barium	112.9		"	100	13.51	99	80-120		
Thallium	118.0		"	100	0.2518	118	80-120		
Lead	112.7		"	100	0.6430	112	80-120		
Reference (1011092-SRM2)		Dilution Factor: 2		Prepared: 11/15/10 Analyzed: 11/18/10					
Beryllium	925.1	4.00	ug/L	1000		93	80-120		
Vanadium	992.6	40.0	"	1000		99	80-120		
Chromium	967.1	20.0	"	1000		97	80-120		
Cobalt	1018	4.00	"	1000		102	80-120		
Nickel	1051	20.0	"	1000		105	80-120		
Copper	1011	20.0	"	1000		101	80-120		
Arsenic	1999	40.0	"	2000		100	80-120		
Selenium	1068	20.0	"	1000		107	80-120		
Molybdenum	923.1	8.00	"	1000		92	80-120		
Silver	241.9	10.0	"	250		97	80-120		
Cadmium	982.1	4.00	"	1000		98	80-120		
Antimony	1991	20.0	"	2000		100	80-120		
Barium	1010	200	"	1000		101	80-120		
Thallium	4928	20.0	"	5000		99	80-120		
Lead	2062	4.00	"	2000		103	80-120		

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**Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control****TechLaw, Inc. - ESAT Region 8**

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%D or RPD	%D or RPD Limit
Batch 1011093 - 200.2 - TR Metals					Water	ICPMS-PE DRC-II		
Method Blank (1011093-BLK2)						Prepared: 11/15/10 Analyzed: 11/22/10		
Beryllium	< 0.500	1.00	ug/L					
Vanadium	< 5.00	10.0	"					
Chromium	< 2.50	5.00	"					
Cobalt	< 0.500	1.00	"					
Nickel	< 2.50	5.00	"					
Copper	< 2.50	5.00	"					
Arsenic	< 2.50	10.0	"					
Selenium	< 2.50	5.00	"					
Molybdenum	0.5896	2.00	"					
Silver	< 0.500	2.50	"					
Cadmium	< 0.500	1.00	"					
Antimony	< 2.50	5.00	"					
Barium	< 25.0	50.0	"					
Thallium	< 2.50	5.00	"					
Lead	< 0.500	1.00	"					
Duplicate (1011093-DUP2)			Dilution Factor: 5	Source: C101101-19		Prepared: 11/15/10 Analyzed: 11/22/10		
Beryllium	1.131	1.00	ug/L		1.136		0.5	20
Vanadium	< 5.00	10.0	"		< 5.00			20
Chromium	< 2.50	5.00	"		< 2.50			20
Cobalt	23.46	1.00	"		22.27		5	20
Nickel	11.47	5.00	"		11.04		4	20
Copper	152.5	5.00	"		147.1		4	20
Arsenic	< 2.50	10.0	"		< 2.50			20
Selenium	< 2.50	5.00	"		< 2.50			20
Molybdenum	< 0.500	2.00	"		< 0.500			20
Silver	< 0.500	2.50	"		< 0.500			20
Cadmium	6.159	1.00	"		6.572		6	20
Antimony	< 2.50	5.00	"		< 2.50			20
Barium	< 25.0	50.0	"		< 25.0			20
Thallium	< 2.50	5.00	"		< 2.50			20
Lead	18.21	1.00	"		17.41		4	20

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011093 - 200.2 - TR Metals		<i>Water</i>						ICPMS-PE DRC-II	
<b>Matrix Spike (1011093-MS2)</b>		Dilution Factor: 5	<b>Source: C101101-19</b>			Prepared: 11/15/10 Analyzed: 11/22/10			
Beryllium	175.7	1.00	ug/L	200	1.136	87	75-125		
Vanadium	279.2	10.0	"	300	< 5.00	93	75-125		
Chromium	358.5	5.00	"	400	< 2.50	90	75-125		
Cobalt	218.4	1.00	"	200	22.27	98	75-125		
Nickel	487.1	5.00	"	500	11.04	95	75-125		
Copper	468.7	5.00	"	300	147.1	107	75-125		
Arsenic	821.5	10.0	"	800	< 2.50	103	75-125		
Selenium	2039	5.00	"	2000	< 2.50	102	75-125		
Molybdenum	376.4	2.00	"	400	< 0.500	94	75-125		
Silver	71.45	2.50	"	75.0	< 0.500	95	75-125		
Cadmium	201.2	1.00	"	200	6.572	97	75-125		
Antimony	794.6	5.00	"	800	< 2.50	99	75-125		
Barium	195.4	50.0	"	200	< 25.0	98	75-125		
Thallium	2018	5.00	"	2000	< 2.50	101	75-125		
Lead	1074	1.00	"	1000	17.41	106	75-125		
<b>Matrix Spike Dup (1011093-MSD2)</b>		Dilution Factor: 5	<b>Source: C101101-19</b>			Prepared: 11/15/10 Analyzed: 11/22/10			
Beryllium	166.2	1.00	ug/L	200	1.136	83	75-125	6	20
Vanadium	261.2	10.0	"	300	< 5.00	87	75-125	7	20
Chromium	336.4	5.00	"	400	< 2.50	84	75-125	6	20
Cobalt	207.3	1.00	"	200	22.27	93	75-125	5	20
Nickel	448.0	5.00	"	500	11.04	87	75-125	8	20
Copper	422.1	5.00	"	300	147.1	92	75-125	10	20
Arsenic	786.6	10.0	"	800	< 2.50	98	75-125	4	20
Selenium	1890	5.00	"	2000	< 2.50	95	75-125	8	20
Molybdenum	365.6	2.00	"	400	< 0.500	91	75-125	3	20
Silver	69.90	2.50	"	75.0	< 0.500	93	75-125	2	20
Cadmium	198.4	1.00	"	200	6.572	96	75-125	1	20
Antimony	767.0	5.00	"	800	< 2.50	96	75-125	4	20
Barium	187.6	50.0	"	200	< 25.0	94	75-125	4	20
Thallium	2020	5.00	"	2000	< 2.50	101	75-125	0.1	20
Lead	1075	1.00	"	1000	17.41	106	75-125	0.08	20

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

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Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%D or RPD	%D or RPD Limit
Batch 1011093 - 200.2 - TR Metals		<i>Water</i>					ICPMS-PE DRC-II	
Post Spike (1011093-PS2)		Dilution Factor: 5      Source: C101101-19					Prepared: 11/15/10 Analyzed: 11/22/10	
Beryllium	92.24		ug/L	100	1.136	91	80-120	
Vanadium	88.44		"	100	-2.870	91	80-120	
Chromium	89.26		"	100	0.7133	89	80-120	
Cobalt	121.4		"	100	22.27	99	80-120	
Nickel	106.8		"	100	11.04	96	80-120	
Copper	254.9		"	100	147.1	108	80-120	
Arsenic	102.4		"	100	0.2622	102	80-120	
Selenium	486.2		"	500	-0.2672	97	80-120	
Molybdenum	93.71		"	100	0.4580	93	80-120	
Silver	93.95		"	100	0.2970	94	80-120	
Cadmium	101.1		"	100	6.572	94	80-120	
Antimony	96.56		"	100	0.04095	97	80-120	
Barium	98.26		"	100	11.46	87	80-120	
Thallium	119.7		"	100	0.3929	119	80-120	
Lead	124.6		"	100	17.41	107	80-120	
Reference (1011093-SRM2)		Dilution Factor: 2					Prepared: 11/15/10 Analyzed: 11/22/10	
Beryllium	838.4	4.00	ug/L	1000	84	80-120		
Vanadium	930.2	40.0	"	1000	93	80-120		
Chromium	902.5	20.0	"	1000	90	80-120		
Cobalt	990.5	4.00	"	1000	99	80-120		
Nickel	986.1	20.0	"	1000	99	80-120		
Copper	1065	20.0	"	1000	106	80-120		
Arsenic	1962	40.0	"	2000	98	80-120		
Selenium	978.4	20.0	"	1000	98	80-120		
Molybdenum	930.2	8.00	"	1000	93	80-120		
Silver	231.7	10.0	"	250	93	80-120		
Cadmium	946.1	4.00	"	1000	95	80-120		
Antimony	1956	20.0	"	2000	98	80-120		
Barium	965.4	200	"	1000	97	80-120		
Thallium	5054	20.0	"	5000	101	80-120		
Lead	2116	4.00	"	2000	106	80-120		

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

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Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011094 - 200.2 - TR Metals		<i>Water</i>						ICPMS-PE DRC-II	
Method Blank (1011094-BLK2)		Dilution Factor: 5						Prepared: 11/15/10 Analyzed: 11/22/10	
Beryllium	< 0.500	1.00	ug/L						
Vanadium	< 5.00	10.0	"						
Chromium	< 2.50	5.00	"						
Cobalt	< 0.500	1.00	"						
Nickel	< 2.50	5.00	"						
Copper	< 2.50	5.00	"						
Arsenic	< 2.50	10.0	"						
Selenium	< 2.50	5.00	"						
Molybdenum	< 0.500	1.00	"						
Silver	< 0.500	2.50	"						
Cadmium	< 0.500	1.00	"						
Antimony	< 2.50	5.00	"						
Barium	< 25.0	50.0	"						
Thallium	< 2.50	5.00	"						
Lead	< 0.500	1.00	"						
Duplicate (1011094-DUP2)		Dilution Factor: 5						Source: C101101-36 Prepared: 11/15/10 Analyzed: 11/22/10	
Beryllium	4.262	1.00	ug/L	3.796			12	20	
Vanadium	< 5.00	10.0	"	< 5.00				20	
Chromium	< 2.50	5.00	"	< 2.50				20	
Cobalt	22.56	1.00	"	22.60			0.2	20	
Nickel	13.93	5.00	"	13.55			3	20	
Copper	816.8	5.00	"	819.6			0.3	20	
Arsenic	< 2.50	10.0	"	< 2.50				20	
Selenium	< 2.50	5.00	"	< 2.50				20	
Molybdenum	< 0.500	1.00	"	< 0.500				20	
Silver	0.6416	2.50	"	< 0.500				20	
Cadmium	75.04	1.00	"	72.79			3	20	
Antimony	< 2.50	5.00	"	< 2.50				20	
Barium	< 25.0	50.0	"	< 25.0				20	
Thallium	< 2.50	5.00	"	< 2.50				20	
Lead	73.68	1.00	"	75.63			3	20	

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

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Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011094 - 200.2 - TR Metals		Water						ICPMS-PE DRC-II	
Matrix Spike (1011094-MS2)		Dilution Factor: 5		Source: C101101-36			Prepared: 11/15/10 Analyzed: 11/22/10		
Beryllium	170.6	1.00	ug/L	200	3.796	83	75-125		
Vanadium	267.2	10.0	"	300	< 5.00	89	75-125		
Chromium	350.1	5.00	"	400	< 2.50	88	75-125		
Cobalt	204.6	1.00	"	200	22.60	91	75-125		
Nickel	463.8	5.00	"	500	13.55	90	75-125		
Copper	1118	5.00	"	300	819.6	100	75-125		
Arsenic	789.1	10.0	"	800	< 2.50	99	75-125		
Selenium	1938	5.00	"	2000	< 2.50	97	75-125		
Molybdenum	370.5	1.00	"	400	< 0.500	93	75-125		
Silver	68.46	2.50	"	75.0	< 0.500	91	75-125		
Cadmium	257.7	1.00	"	200	72.79	92	75-125		
Antimony	766.9	5.00	"	800	< 2.50	96	75-125		
Barium	184.8	50.0	"	200	< 25.0	92	75-125		
Thallium	2044	5.00	"	2000	< 2.50	102	75-125		
Lead	1150	1.00	"	1000	75.63	107	75-125		
Matrix Spike Dup (1011094-MSD2)		Dilution Factor: 5		Source: C101101-36			Prepared: 11/15/10 Analyzed: 11/22/10		
Beryllium	170.3	1.00	ug/L	200	3.796	83	75-125	0.2	20
Vanadium	270.4	10.0	"	300	< 5.00	90	75-125	1	20
Chromium	362.6	5.00	"	400	< 2.50	91	75-125	4	20
Cobalt	211.6	1.00	"	200	22.60	94	75-125	3	20
Nickel	473.9	5.00	"	500	13.55	92	75-125	2	20
Copper	1114	5.00	"	300	819.6	98	75-125	0.4	20
Arsenic	791.5	10.0	"	800	< 2.50	99	75-125	0.3	20
Selenium	1901	5.00	"	2000	< 2.50	95	75-125	2	20
Molybdenum	367.4	1.00	"	400	< 0.500	92	75-125	0.8	20
Silver	68.14	2.50	"	75.0	< 0.500	91	75-125	0.5	20
Cadmium	257.9	1.00	"	200	72.79	93	75-125	0.07	20
Antimony	754.3	5.00	"	800	< 2.50	94	75-125	2	20
Barium	184.1	50.0	"	200	< 25.0	92	75-125	0.4	20
Thallium	2010	5.00	"	2000	< 2.50	100	75-125	2	20
Lead	1126	1.00	"	1000	75.63	105	75-125	2	20

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

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Analyte	Result	Def. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011094 - 200.2 - TR Metals		<i>Water</i>					ICPMS-PE DRC-II		
Post Spike (1011094-PS2)		Dilution Factor: 5		Source: C101101-36		Prepared: 11/15/10 Analyzed: 11/22/10			
Beryllium	92.68		ug/L	100	3.796	89	80-120		
Vanadium	88.13		"	100	-3.873	92	80-120		
Chromium	87.30		"	100	1.539	86	80-120		
Cobalt	113.9		"	100	22.60	91	80-120		
Nickel	106.5		"	100	13.55	93	80-120		
Copper	896.8		"	100	819.6	77	80-120		
Arsenic	100.8		"	100	-1.409	102	80-120		
Selenium	464.7		"	500	1.646	93	80-120		
Molybdenum	91.75		"	100	-0.008050	92	80-120		
Silver	92.29		"	100	0.2944	92	80-120		
Cadmium	161.7		"	100	72.79	89	80-120		
Antimony	93.35		"	100	0.001050	93	80-120		
Barium	99.76		"	100	11.35	88	80-120		
Thallium	126.0		"	100	0.3630	126	80-120		
Lead	187.5		"	100	75.63	112	80-120		
Reference (1011094-SRM2)		Dilution Factor: 2		Prepared: 11/15/10 Analyzed: 11/22/10					
Beryllium	806.1	4.00	ug/L	1000		81	80-120		
Vanadium	876.6	40.0	"	1000		88	80-120		
Chromium	834.8	20.0	"	1000		83	80-120		
Cobalt	949.3	4.00	"	1000		95	80-120		
Nickel	907.6	20.0	"	1000		91	80-120		
Copper	1005	20.0	"	1000		100	80-120		
Arsenic	1894	40.0	"	2000		95	80-120		
Selenium	922.5	20.0	"	1000		92	80-120		
Molybdenum	916.1	4.00	"	1000		92	80-120		
Silver	225.9	10.0	"	250		90	80-120		
Cadmium	944.0	4.00	"	1000		94	80-120		
Antimony	1894	20.0	"	2000		95	80-120		
Barium	880.6	200	"	1000		88	80-120		
Thallium	4725	20.0	"	5000		94	80-120		
Lead	2025	4.00	"	2000		101	80-120		

Project Name: Upper Animas Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011097 - 1011092		<i>Water</i>						ICPMS-PE DRC-II	
Serial Dilution (1011097-SRD1)		Dilution Factor: 2	Source: C101101-14		Prepared: 11/15/10 Analyzed: 11/18/10				
Beryllium	< 12.5	25.0	ug/L		< 2.50				10
Vanadium	< 12.5	25.0	"		< 2.50				10
Chromium	< 12.5	25.0	"		< 2.50				10
Cobalt	< 12.5	25.0	"		7.713				10
Nickel	< 12.5	25.0	"		< 2.50				10
Copper	< 12.5	25.0	"		8.831				10
Arsenic	< 12.5	25.0	"		< 2.50				10
Selenium	< 12.5	25.0	"		< 2.50				10
Molybdenum	< 2.50	10.0	"		0.5349				200
Silver	< 12.5	25.0	"		< 2.50				10
Cadmium	< 12.5	25.0	"		2.728				10
Antimony	< 12.5	25.0	"		< 2.50				10
Barium	< 12.5	25.0	"		< 2.50				10
Thallium	< 12.5	25.0	"		< 2.50				10
Lead	< 12.5	25.0	"		0.6430				10
Batch 1011102 - 1011094		<i>Water</i>						ICPMS-PE DRC-II	
Serial Dilution (1011102-SRD1)		Dilution Factor: 2	Source: C101101-19		Prepared: 11/15/10 Analyzed: 11/22/10				
Beryllium	< 2.50	5.00	ug/L		1.136				10
Vanadium	< 2.50	5.00	"		< 0.50				10
Chromium	< 2.50	5.00	"		< 0.50				10
Cobalt	23.55	5.00	"		22.27		6	10	
Nickel	11.43	5.00	"		11.04		3	10	
Copper	150.6	5.00	"		147.1		2	10	
Arsenic	< 2.50	5.00	"		< 0.50				10
Selenium	< 2.50	5.00	"		< 0.50				10
Molybdenum	< 2.50	10.0	"		< 0.50				200
Silver	< 2.50	5.00	"		< 0.50				10
Cadmium	5.378	5.00	"		6.572		20	10	
Antimony	< 2.50	5.00	"		< 0.50				10
Barium	11.52	5.00	"		< 0.50				10
Thallium	< 2.50	5.00	"		< 0.50				10
Lead	17.01	5.00	"		17.41		2	10	

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%D or RPD	%D or RPD Limit
Batch 1011102 - 1011094		<i>Water</i>						ICPMS-PE DRC-II
Serial Dilution (1011102-SRD2)		Dilution Factor: 2	Source: C101101-36		Prepared: 11/15/10 Analyzed: 11/22/10			
Beryllium	< 12.5	25.0	ug/L		3.796			10
Vanadium	< 12.5	25.0	"		< 2.50			10
Chromium	< 12.5	25.0	"		< 2.50			10
Cobalt	21.19	25.0	"		22.60		6	10
Nickel	12.88	25.0	"		13.55		5	10
Copper	797.8	25.0	"		819.6		3	10
Arsenic	< 12.5	25.0	"		< 2.50			10
Selenium	< 12.5	25.0	"		< 2.50			10
Molybdenum	< 2.50	5.00	"		< 0.50			200
Silver	< 12.5	25.0	"		< 2.50			10
Cadmium	71.44	25.0	"		72.79		2	10
Antimony	< 12.5	25.0	"		< 2.50			10
Barium	< 12.5	25.0	"		< 2.50			10
Thallium	< 12.5	25.0	"		< 2.50			10
Lead	70.15	25.0	"		75.63		8	10

## ICPOE - PE Optima

Batch 1011092 - 200.2 - TR Metals		<i>Water</i>		ICPOE - PE Optima
Method Blank (1011092-BLK1)		Dilution Factor: 1	Prepared: 11/15/10 Analyzed: 11/18/10	
Aluminum	< 20.0	50.0	ug/L	
Calcium	< 100	250	"	
Iron	< 100	250	"	
Potassium	< 250	1000	"	
Magnesium	< 100	250	"	
Manganese	< 2.00	5.00	"	
Sodium	< 250	500	"	
Zinc	< 10.0	20.0	"	

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011092 - 200.2 - TR Metals		Water						ICPOE - PE Optima	
<b>Duplicate (1011092-DUP1)</b>		Dilution Factor: 1		Source: C101101-14		Prepared: 11/15/10 Analyzed: 11/18/10			
Aluminum	715.8	50.0	ug/L		719.9			0.6	20
Calcium	162500	250	"		161800			0.4	20
Iron	3227	250	"		3228			0.04	20
Potassium	742.1	1000	"		747.0			0.7	20
Magnesium	8261	250	"		8227			0.4	20
Manganese	1849	5.00	"		1836			0.7	20
Sodium	3483	500	"		3472			0.3	20
Zinc	656.3	20.0	"		647.0			1	20
<b>Matrix Spike (1011092-MS1)</b>		Dilution Factor: 1		Source: C101101-14		Prepared: 11/15/10 Analyzed: 11/18/10			
Aluminum	2701	50.0	ug/L	2000	719.9	99	75-125		
Calcium	162100	250	"	1000	161800	23	75-125		
Iron	6166	250	"	3000	3228	98	75-125		
Potassium	10920	1000	"	10000	747.0	102	75-125		
Magnesium	10230	250	"	2000	8227	100	75-125		
Manganese	2022	5.00	"	200	1836	93	75-125		
Sodium	6628	500	"	3000	3472	105	75-125		
Zinc	833.7	20.0	"	200	647.0	93	75-125		
<b>Matrix Spike Dup (1011092-MSD1)</b>		Dilution Factor: 1		Source: C101101-14		Prepared: 11/15/10 Analyzed: 11/18/10			
Aluminum	2692	50.0	ug/L	2000	719.9	99	75-125	0.3	20
Calcium	162700	250	"	1000	161800	91	75-125	0.4	20
Iron	6208	250	"	3000	3228	99	75-125	0.7	20
Potassium	10910	1000	"	10000	747.0	102	75-125	0.06	20
Magnesium	10220	250	"	2000	8227	100	75-125	0.05	20
Manganese	2041	5.00	"	200	1836	103	75-125	1	20
Sodium	6597	500	"	3000	3472	104	75-125	0.5	20
Zinc	833.5	20.0	"	200	647.0	93	75-125	0.03	20

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011092 - 200.2 - TR Metals		<i>Water</i>					ICPOE - PE Optima		
Post Spike (1011092-PS1)		Dilution Factor: 1		Source: C101101-14		Prepared: 11/15/10 Analyzed: 11/18/10			
Aluminum	11330		ug/L	10100	719.9	105	80-120		
Calcium	167600		"	10100	161800	58	80-120		
Iron	13410		"	10100	3228	101	80-120		
Potassium	11360		"	10100	747.0	105	80-120		
Magnesium	18590		"	10100	8227	103	80-120		
Manganese	1889		"	100	1836	53	80-120		
Sodium	14190		"	10100	3472	106	80-120		
Zinc	707.6		"	100	647.0	61	80-120		
Reference (1011092-SRM1)		Dilution Factor: 1		Prepared: 11/15/10 Analyzed: 11/18/10					
Aluminum	988.6	50.0	ug/L	1000	99	80-120			
Calcium	930.7	250	"	1000	93	80-120			
Iron	955.9	250	"	1000	96	80-120			
Potassium	4782	1000	"	5000	96	80-120			
Magnesium	992.5	250	"	1000	99	80-120			
Manganese	1023	5.00	"	1000	102	80-120			
Sodium	953.0	500	"	1000	95	80-120			
Zinc	978.9	20.0	"	1000	98	80-120			
Batch 1011093 - 200.2 - TR Metals		<i>Water</i>					ICPOE - PE Optima		
Method Blank (1011093-BLK1)		Dilution Factor: 1		Prepared: 11/15/10 Analyzed: 11/22/10					
Aluminum	< 20.0	50.0	ug/L						
Calcium	< 100	250	"						
Iron	< 100	250	"						
Potassium	< 250	1000	"						
Magnesium	< 100	250	"						
Manganese	< 2.00	5.00	"						
Sodium	< 250	500	"						
Zinc	< 10.0	20.0	"						

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit	
Batch 1011093 - 200.2 - TR Metals				Water						
Duplicate (1011093-DUP1)				Dilution Factor: 1	Source: C101101-19					
Aluminum	7856	50.0	ug/L		7895			0.5	20	
Calcium	176200	250	"		176700			0.3	20	
Iron	11840	250	"		12030			2	20	
Potassium	1802	1000	"		1838			2	20	
Magnesium	10820	250	"		10900			0.7	20	
Manganese	4546	5.00	"		4579			0.7	20	
Sodium	4525	500	"		4549			0.5	20	
Zinc	2315	20.0	"		2339			1	20	
Matrix Spike (1011093-MS1)				Dilution Factor: 1	Source: C101101-19					
Aluminum	9853	50.0	ug/L	2000	7895	98	75-125			
Calcium	175800	250	"	1000	176700	NR	75-125			
Iron	14930	250	"	3000	12030	97	75-125			
Potassium	12170	1000	"	10000	1838	103	75-125			
Magnesium	12830	250	"	2000	10900	97	75-125			
Manganese	4884	5.00	"	200	4579	152	75-125			
Sodium	7721	500	"	3000	4549	106	75-125			
Zinc	2573	20.0	"	200	2339	117	75-125			
Matrix Spike Dup (1011093-MSD1)				Dilution Factor: 1	Source: C101101-19					
Aluminum	9766	50.0	ug/L	2000	7895	94	75-125	0.9	20	
Calcium	173100	250	"	1000	176700	NR	75-125	2	20	
Iron	14700	250	"	3000	12030	89	75-125	2	20	
Potassium	12140	1000	"	10000	1838	103	75-125	0.3	20	
Magnesium	12710	250	"	2000	10900	91	75-125	0.9	20	
Manganese	4654	5.00	"	200	4579	38	75-125	5	20	
Sodium	7702	500	"	3000	4549	105	75-125	0.2	20	
Zinc	2471	20.0	"	200	2339	66	75-125	4	20	

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
<b>Batch 1011093 - 200.2 - TR Metals</b>									
<i>Water</i>									
ICPOE - PE Optima									
<b>Post Spike (1011093-PS1)</b>									
		Dilution Factor: 1			Source: C101101-19				
Aluminum	18300		ug/L	10100	7895	103	80-120		
Calcium	180400		"	10100	176700	37	80-120		
Iron	21930		"	10100	12030	98	80-120		
Potassium	12460		"	10100	1838	105	80-120		
Magnesium	21060		"	10100	10900	101	80-120		
Manganese	4515		"	100	4579	NR	80-120		
Sodium	15300		"	10100	4549	106	80-120		
Zinc	2310		"	100	2339	NR	80-120		
<b>Reference (1011093-SRM1)</b>									
		Dilution Factor: 1							
Aluminum	1013	50.0	ug/L	1000		101	80-120		
Calcium	953.4	250	"	1000		95	80-120		
Iron	983.9	250	"	1000		98	80-120		
Potassium	4914	1000	"	5000		98	80-120		
Magnesium	1017	250	"	1000		102	80-120		
Manganese	997.4	5.00	"	1000		100	80-120		
Sodium	959.1	500	"	1000		96	80-120		
Zinc	934.4	20.0	"	1000		93	80-120		
<b>Batch 1011094 - 200.2 - TR Metals</b>									
<i>Water</i>									
ICPOE - PE Optima									
<b>Method Blank (1011094-BLK1)</b>									
		Dilution Factor: 1							
Aluminum	< 20.0	50.0	ug/L						
Calcium	< 100	250	"						
Iron	< 100	250	"						
Potassium	< 250	1000	"						
Magnesium	< 100	250	"						
Manganese	< 2.00	5.00	"						
Sodium	< 250	500	"						
Zinc	< 10.0	20.0	"						

Project Name: Upper Animas - Water - Oct 2010

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TDF #: DG-216

## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%D or RPD	%D or RPD Limit
Batch 1011094 - 200.2 - TR Metals		<b>Water</b>						<b>ICPOE - PE Optima</b>
<b>Duplicate (1011094-DUP1)</b>		Dilution Factor: 1		Source: C101101-36		Prepared: 11/15/10 Analyzed: 11/22/10		
Aluminum	10150	50.0	ug/L		10090		0.5	20
Calcium	173500	250	"		173700		0.08	20
Iron	4482	250	"		4459		0.5	20
Potassium	1414	1000	"		1421		0.5	20
Magnesium	13630	250	"		13590		0.3	20
Manganese	21780	5.00	"		21890		0.5	20
Sodium	5526	500	"		5519		0.1	20
Zinc	27620	20.0	"		27560		0.2	20
<b>Matrix Spike (1011094-MS1)</b>		Dilution Factor: 1		Source: C101101-36		Prepared: 11/15/10 Analyzed: 11/22/10		
Aluminum	11950	50.0	ug/L	2000	10090	93	75-125	
Calcium	172200	250	"	1000	173700	NR	75-125	
Iron	7276	250	"	3000	4459	94	75-125	
Potassium	11470	1000	"	10000	1421	101	75-125	
Magnesium	15410	250	"	2000	13590	91	75-125	
Manganese	21740	5.00	"	200	21890	NR	75-125	
Sodium	8591	500	"	3000	5519	102	75-125	
Zinc	27460	20.0	"	200	27560	NR	75-125	
<b>Matrix Spike Dup (1011094-MSD1)</b>		Dilution Factor: 1		Source: C101101-36		Prepared: 11/15/10 Analyzed: 11/22/10		
Aluminum	12000	50.0	ug/L	2000	10090	96	75-125	0.4
Calcium	172800	250	"	1000	173700	NR	75-125	0.4
Iron	7410	250	"	3000	4459	98	75-125	2
Potassium	11570	1000	"	10000	1421	101	75-125	0.8
Magnesium	15470	250	"	2000	13590	94	75-125	0.4
Manganese	21690	5.00	"	200	21890	NR	75-125	0.2
Sodium	8624	500	"	3000	5519	103	75-125	0.4
Zinc	27600	20.0	"	200	27560	16	75-125	0.5

Project Name: Upper Animas - Water - Oct 2010

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## Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control

TechLaw, Inc. - ESAT Region 8

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011094 - 200.2 - TR Metals		<i>Water</i>					ICPOE - PE Optima		
Post Spike (1011094-PS1)		Dilution Factor: 1		Source: C101101-36			Prepared: 11/15/10 Analyzed: 11/22/10		
Aluminum	20250		ug/L	10100	10090	101	80-120		
Calcium	178900		"	10100	173700	52	80-120		
Iron	14360		"	10100	4459	98	80-120		
Potassium	11810		"	10100	1421	103	80-120		
Magnesium	23550		"	10100	13590	99	80-120		
Manganese	21170		"	100	21890	NR	80-120		
Sodium	16060		"	10100	5519	104	80-120		
Zinc	26590		"	100	27560	NR	80-120		
Reference (1011094-SRM1)		Dilution Factor: 1		Prepared: 11/15/10 Analyzed: 11/22/10					
Aluminum	1000	50.0	ug/L	1000		100	80-120		
Calcium	941.3	250	"	1000		94	80-120		
Iron	946.9	250	"	1000		95	80-120		
Potassium	4861	1000	"	5000		97	80-120		
Magnesium	1008	250	"	1000		101	80-120		
Manganese	976.4	5.00	"	1000		98	80-120		
Sodium	949.4	500	"	1000		95	80-120		
Zinc	923.1	20.0	"	1000		92	80-120		
Batch 1011098 - 1011092		<i>Water</i>					ICPOE - PE Optima		
Serial Dilution (1011098-SRD1)		Dilution Factor: 5		Source: C101101-14			Prepared: 11/15/10 Analyzed: 11/18/10		
Aluminum	708.2	250	ug/L		719.9			2	10
Calcium	161200	1250	"		161800			0.4	10
Iron	3255	1250	"		3228			0.8	10
Potassium	< 1250	5000	"		747.0				10
Magnesium	8182	1250	"		8227			0.5	10
Manganese	1884	25.0	"		1836			3	10
Sodium	3417	2500	"		3472			2	10
Zinc	670.2	100	"		647.0			4	10

Project Name: Upper Animas - Water - Oct 2010

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TDF #: DG-216

**Metals (Total Recov) by EPA 200/7000 Series Methods - Quality Control****TechLaw, Inc. - ESAT Region 8**

Analyte	Result	Det. Limit	Units	Spike Level	Source Result	%R	%R Limits	%D or RPD	%D or RPD Limit
Batch 1011101 - 1011094		<b>Water</b>						<b>ICPOE - PE Optima</b>	
<b>Serial Dilution (1011101-SRD1)</b>		Dilution Factor: 5		Source: C101101-19		Prepared: 11/15/10 Analyzed: 11/22/10			
Aluminum	7782	250	ug/L		7895			1	10
Calcium	175300	1250	"		176700			0.8	10
Iron	12240	1250	"		12030			2	10
Potassium	2014	5000	"		1838			9	10
Magnesium	10860	1250	"		10900			0.3	10
Manganese	4722	25.0	"		4579			3	10
Sodium	4490	2500	"		4549			1	10
Zinc	2481	100	"		2339			6	10
<b>Serial Dilution (1011101-SRD2)</b>		Dilution Factor: 5		Source: C101101-36		Prepared: 11/15/10 Analyzed: 11/22/10			
Aluminum	10290	250	ug/L		10090			2	10
Calcium	178100	1250	"		173700			3	10
Iron	4744	1250	"		4459			6	10
Potassium	1581	5000	"		1421			11	10
Magnesium	13950	1250	"		13590			3	10
Manganese	23090	25.0	"		21890			5	10
Sodium	5564	2500	"		5519			0.8	10
Zinc	29310	100	"		27560			6	10

NOTE: %R = % Recovery, %R limits do not apply when sample levels exceed 4x the spike level.

RPD = Relative Percent Difference, %D = % Difference, DL = Detection Limit for QC sample

Project Name: Upper Animas Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.8

Analysis Name:

ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-II

Work Order: Nu

C101101Analytical Sequence: 1011097 Total Recoverable

Concentration Units:

ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Beryllium	0.00	1	2	3	4	NA	1011092-BLK2
		0.02	0.01	0.01	0.00	NA	
		5	6	7	8	-0.01	
							0.20
	0.00	1	2	3	4	NA	1011093-BLK2
		0.02	0.01	0.01	0.00	NA	
		5	6	7	8	0.00	
							0.20
	0.00	1	2	3	4	NA	1011094-BLK2
		0.02	0.01	0.01	0.00	NA	
		5	6	7	8	-0.02	
							0.20
Vanadium	-0.02	1	2	3	4	NA	1011094-BLK2
		-0.02	-0.01	-0.02	-0.03	NA	
		5	6	7	8	-1.97	
							2.00
	-0.02	1	2	3	4	NA	1011093-BLK2
		-0.02	-0.01	-0.02	-0.03	NA	
		5	6	7	8	-0.65	
							2.00
	-0.02	1	2	3	4	NA	1011092-BLK2
		-0.02	-0.01	-0.02	-0.03	NA	
		5	6	7	8	-0.57	
							2.00
Chromium	-0.07	1	2	3	4	NA	1011094-BLK2
		-0.07	0.04	-0.08	-0.08	NA	
		5	6	7	8	0.35	
							1.00
	-0.07	1	2	3	4	NA	1011092-BLK2
		-0.07	0.04	-0.08	-0.08	NA	
		5	6	7	8	0.41	
							1.00

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**TechLaw Inc., ESAT Region 8**  
**INORGANIC ANALYSES DATA SHEET**  
**Initial and Continuing Calibration Blanks**

Analytical Method:	<u>200.8</u>	Analysis Name:	<u>ICP-MS Tot. Rec. Metals-2010</u>
Instrument:	<u>ICPMS-PE DRC-II</u>	Work Order: Nu	<u>C101101</u>
Analytical Sequence:	<u>1011097 Total Recoverable</u>	Concentration Units:	<u>ug/L</u>

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Chromium	-0.07	-0.07	0.04	-0.08	-0.08	NA	1011093-BLK2
		5	6	7	8		
	0.00	1	2	3	4	NA	1011093-BLK2
Cobalt	0.00	0.00	0.00	0.00	0.00	NA	0.00
		5	6	7	8		
	0.00	1	2	3	4	NA	1011094-BLK2
	0.00	0.00	0.00	0.00	0.00	NA	-0.01
		5	6	7	8		
	0.00	1	2	3	4	NA	1011092-BLK2
Nickel	0.01	0.00	0.00	0.00	0.00	NA	-0.01
		5	6	7	8		
	0.01	1	2	3	4	NA	1011092-BLK2
	0.01	0.00	0.00	0.00	0.00	NA	0.00
		5	6	7	8		
	0.01	1	2	3	4	NA	1011094-BLK2
Copper	0.02	0.00	0.00	0.00	0.00	NA	0.00
		5	6	7	8		
	0.20	1	2	3	4	NA	1011094-BLK2
	0.12	0.06	0.01	0.01	0.01	NA	0.02
		5	6	7	8		

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## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.8Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011097 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Copper	0.20	0.12	0.06	0.01	0.01	NA	1011093-BLK2
		5	6	7	8		
						NA	0.19
	0.20	0.12	0.06	0.01	0.01	NA	1011092-BLK2
		5	6	7	8		
						NA	0.08
Arsenic	-0.01	1	2	3	4	NA	1011093-BLK2
		0.02	0.02	-0.01	0.04		
		5	6	7	8	NA	-0.32
	-0.01	1	2	3	4	NA	1011092-BLK2
		0.02	0.02	-0.01	0.04		
		5	6	7	8	NA	-0.30
	-0.01	1	2	3	4	NA	1011094-BLK2
		0.02	0.02	-0.01	0.04		
		5	6	7	8	NA	-0.47
Selenium	0.06	1	2	3	4	NA	1011092-BLK2
		-0.01	0.07	-0.01	0.03		
		5	6	7	8	NA	-0.02
	0.06	1	2	3	4	NA	1011093-BLK2
		-0.01	0.07	-0.01	0.03		
		5	6	7	8	NA	-0.27
	0.06	1	2	3	4	NA	1011094-BLK2
		-0.01	0.07	-0.01	0.03		
		5	6	7	8	NA	-0.35

Project Name: **Upper Animas - Water - Oct 2010****Certificate of Analysis**

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**DG-216****TechLaw Inc., ESAT Region 8****INORGANIC ANALYSES DATA SHEET****Initial and Continuing Calibration Blanks**

Analytical Method:	<u>200.8</u>	Analysis Name:	<u>ICP-MS Tot. Rec. Metals-2010</u>
Instrument:	<u>ICPMS-PE DRC-II</u>	Work Order: Nu	<u>C101101</u>
Analytical Sequence:	<u>1011097 Total Recoverable</u>	Concentration Units:	<u>ug/L</u>

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Molybdenum	0.15	0.27	0.12	0.08	0.07	NA	1011093-BLK2
		5	6	7	8		
		0.27	0.12	0.08	0.07	NA	0.12
		5	6	7	8		
Copper	0.15	1	2	3	4	NA	1011094-BLK2
		0.27	0.12	0.08	0.07		
		5	6	7	8	NA	0.00
		0.27	0.12	0.08	0.07		
Iron	0.15	1	2	3	4	NA	1011092-BLK2
		0.27	0.12	0.08	0.07		
		5	6	7	8	NA	0.10
		0.27	0.12	0.08	0.07		
Silver	0.11	1	2	3	4	NA	1011093-BLK2
		0.12	0.13	0.08	0.08		
		5	6	7	8	NA	0.10
		0.12	0.13	0.08	0.08		
Zinc	0.11	1	2	3	4	NA	1011094-BLK2
		0.12	0.13	0.08	0.08		
		5	6	7	8	NA	0.01
		0.12	0.13	0.08	0.08		
Cadmium	0.04	1	2	3	4	NA	1011092-BLK2
		0.02	0.04	0.03	0.01		
		5	6	7	8	NA	0.10
		0.02	0.04	0.03	0.01		
	0.04	1	2	3	4	NA	1011094-BLK2
		0.02	0.04	0.03	0.01		
		5	6	7	8	NA	0.12
		0.02	0.04	0.03	0.01		

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## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.8Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011097 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Cadmium	0.04	0.02	0.04	0.03	0.01	NA	1011093-BLK2
		5	6	7	8		
	0.08	1	2	3	4	NA	1011094-BLK2
Antimony	0.08	0.07	0.06	0.06	0.05	NA	-0.01
		5	6	7	8		
	0.08	1	2	3	4	NA	1011092-BLK2
	0.07	0.06	0.06	0.05	0.05	NA	0.01
		5	6	7	8		
	0.08	1	2	3	4	NA	1011093-BLK2
	0.07	0.06	0.06	0.05	0.05	NA	0.01
		5	6	7	8		
	0.01	1	2	3	4	NA	1011093-BLK2
Barium	-0.01	-0.01	-0.01	-0.01	-0.02	NA	-0.01
		5	6	7	8		
	0.01	1	2	3	4	NA	1011094-BLK2
	-0.01	-0.01	-0.01	-0.01	-0.02	NA	0.00
		5	6	7	8		
	0.01	1	2	3	4	NA	1011092-BLK2
	-0.01	-0.01	-0.01	-0.01	-0.02	NA	0.24
		5	6	7	8		
	0.01	1	2	3	4	NA	1011092-BLK2
Thallium	0.01	0.01	0.23	0.05	0.03	NA	0.03
		5	6	7	8		

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Initial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010  
Instrument: ICPMS-PE DRC-II Work Order: Nu C101101  
Analytical Sequence: 1011097 Total Recoverable Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL	
		1	2	3	4	NA	1011093-BLK2		
Thallium	0.01	0.01	0.23	0.05	0.03	NA	1011093-BLK2	1.00	
		5	6	7	8				
		1	2	3	4	NA	1011094-BLK2		
		0.01	0.23	0.05	0.03				
Lead	0.01	5	6	7	8	NA	0.05	1.00	
		1	2	3	4				
		0.01	0.00	0.00	-0.01	NA	1011094-BLK2		
		5	6	7	8				
	0.01	1	2	3	4	NA	1011092-BLK2	0.20	
		0.01	0.00	0.00	-0.01				
		5	6	7	8	NA	0.01		
		1	2	3	4				
	0.01	0.01	0.00	0.00	-0.01	NA	1011093-BLK2	0.20	
		5	6	7	8				
		1	2	3	4	NA	0.01		
		0.01	0.00	0.00	-0.01				

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## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.7Analysis Name: ICPOE Tot. Rec Metals-2010Instrument: ICPOE - PE OptimaWork Order: Nu C101101Analytical Sequence: 1011098 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Aluminum	1.73	4.40	4.50	4.06	3.24	1011092-BLK1	NA
		5	6	7	8		
		4.40	4.50	4.06	3.24	1.68	NA
		5	6	7	8		
	1.73	1	2	3	4	1011093-BLK1	NA
		4.40	4.50	4.06	3.24		
		5	6	7	8	4.90	NA
		4.40	4.50	4.06	3.24		
	1.73	5	6	7	8	-0.44	NA
		1	2	3	4		
		4.40	4.50	4.06	3.24		
		5	6	7	8		
	2.24	1	2	3	4	1011092-BLK1	NA
		5.06	3.09	5.99	4.80		
		5	6	7	8	3.60	NA
		5.06	3.09	5.99	4.80		
	2.24	1	2	3	4	1011094-BLK1	NA
		5.06	3.09	5.99	4.80		
		5	6	7	8	13.00	NA
		5.06	3.09	5.99	4.80		
	2.24	1	2	3	4	1011093-BLK1	NA
		5.06	3.09	5.99	4.80		
		5	6	7	8	1.18	NA
		5.06	3.09	5.99	4.80		
	6.92	1	2	3	4	1011094-BLK1	NA
		34.41	22.23	29.57	19.18		
		5	6	7	8	16.76	NA
		34.41	22.23	29.57	19.18		
	6.92	1	2	3	4	1011093-BLK1	NA
		5	6	7	8		
		34.41	22.23	29.57	19.18	9.53	NA
		5	6	7	8		

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## Initial and Continuing Calibration Blanks

Analytical Method: 200.7Analysis Name: ICPOE Tot. Rec Metals-2010Instrument: ICPOE - PE OptimaWork Order: Nu C101101Analytical Sequence: 1011098 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Iron	6.92	34.41	22.23	29.57	19.18	1011092-BLK1	NA
		5	6	7	8		
						13.68	NA
Potassium	-14.90	1	2	3	4	1011092-BLK1	NA
		-6.90	-7.38	6.24	10.55		
		5	6	7	8	3.19	NA
	-14.90	1	2	3	4	1011093-BLK1	NA
		-6.90	-7.38	6.24	10.55		
		5	6	7	8	39.48	NA
	-14.90	1	2	3	4	1011094-BLK1	NA
		-6.90	-7.38	6.24	10.55		
		5	6	7	8	40.88	NA
Magnesium	-0.27	1	2	3	4	1011094-BLK1	NA
		1.67	0.93	2.25	0.83		
		5	6	7	8	0.82	NA
	-0.27	1	2	3	4	1011093-BLK1	NA
		1.67	0.93	2.25	0.83		
		5	6	7	8	0.30	NA
	-0.27	1	2	3	4	1011092-BLK1	NA
		1.67	0.93	2.25	0.83		
		5	6	7	8	-0.30	NA
Manganese	0.15	1	2	3	4	1011092-BLK1	NA
		0.07	0.08	0.37	0.18		
		5	6	7	8	0.04	NA

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## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.7Analysis Name: ICPOE Tot. Rec Metals-2010Instrument: ICPOE - PE OptimaWork Order: Nu C101101Analytical Sequence: 1011098 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Manganese	0.15	0.07	0.08	0.37	0.18	1011093-BLK1	NA
		5	6	7	8		
						0.13	NA
	0.15	0.07	0.08	0.37	0.18	1011094-BLK1	NA
		5	6	7	8		
						0.32	NA
Sodium	0.08	1	2	3	4	1011093-BLK1	NA
		3.94	1.44	7.75	0.97		
		5	6	7	8	-6.09	NA
	0.08	1	2	3	4	1011092-BLK1	NA
		3.94	1.44	7.75	0.97		
		5	6	7	8	-0.19	NA
	0.08	1	2	3	4	1011094-BLK1	NA
		3.94	1.44	7.75	0.97		
		5	6	7	8	-10.83	NA
Zinc	-0.09	1	2	3	4	1011093-BLK1	NA
		-0.62	-0.46	0.17	-0.69		
		5	6	7	8	2.53	NA
	-0.09	1	2	3	4	1011094-BLK1	NA
		-0.62	-0.46	0.17	-0.69		
		5	6	7	8	0.97	NA
	-0.09	1	2	3	4	1011092-BLK1	NA
		-0.62	-0.46	0.17	-0.69		
		5	6	7	8	0.66	NA

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**INORGANIC ANALYSES DATA SHEET****Initial and Continuing Calibration Blanks**Analytical Method: 200.7Analysis Name: ICPOE Tot. Rec Metals-2010Instrument: ICPOE - PE OptimaWork Order: Nu C101101Analytical Sequence: 1011101 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL	
		1	2	3	4			
Aluminum	0.34	2.81	-1.26	2.12	2.63	1011092-BLK1	NA 50.00	
		5	6	7	8			
		1.02	1.00	1.25		1.68		
		1	2	3	4			
Sodium	0.34	2.81	-1.26	2.12	2.63	1011093-BLK1	NA 50.00	
		5	6	7	8			
		1.02	1.00	1.25		4.90		
		1	2	3	4			
Magnesium	0.34	2.81	-1.26	2.12	2.63	1011094-BLK1	NA 50.00	
		5	6	7	8			
		1.02	1.00	1.25		-0.44		
		1	2	3	4			
Calcium	0.86	4.70	3.39	3.14	3.42	1011093-BLK1	NA 250.00	
		5	6	7	8			
		4.61	2.64	4.73		1.18		
		1	2	3	4			
Potassium	0.86	4.70	3.39	3.14	3.42	1011092-BLK1	NA 250.00	
		5	6	7	8			
		4.61	2.64	4.73		3.60		
		1	2	3	4			
Iron	-3.47	4.70	3.39	3.14	3.42	1011094-BLK1	NA 250.00	
		5	6	7	8			
		4.61	2.64	4.73		13.00		
		1	2	3	4			
Chloride	-3.47	19.94	24.29	26.41	29.57	1011092-BLK1	NA 250.00	
		5	6	7	8			
		8.59	12.20	10.13		13.68		
		1	2	3	4			
Sulfate	-3.47	19.94	24.29	26.41	29.57	1011094-BLK1	NA 250.00	
		5	6	7	8			
		8.59	12.20	10.13		16.76		
		1	2	3	4			

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## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.7Analysis Name: ICPOE Tot. Rec Metals-2010Instrument: ICPOE - PE OptimaWork Order: Nu C101101Analytical Sequence: 1011101 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Iron	-3.47	19.94	24.29	26.41	29.57	1011093-BLK1	NA
		5	6	7	8		
		8.59	12.20	10.13		9.53	NA
Potassium	34.19	1	2	3	4	1011094-BLK1	NA
		43.03	17.36	21.04	44.40		
		5	6	7	8	40.88	NA
		21.19	57.62	28.96			
	34.19	1	2	3	4	1011092-BLK1	NA
		43.03	17.36	21.04	44.40		
		5	6	7	8	3.19	NA
		21.19	57.62	28.96			
	34.19	1	2	3	4	1011093-BLK1	NA
		43.03	17.36	21.04	44.40		
		5	6	7	8	39.48	NA
		21.19	57.62	28.96			
Magnesium	1.87	1	2	3	4	1011092-BLK1	NA
		2.92	1.56	1.79	1.17		
		5	6	7	8	-0.30	NA
		2.39	2.33	2.79			
	1.87	1	2	3	4	1011094-BLK1	NA
		2.92	1.56	1.79	1.17		
		5	6	7	8	0.82	NA
		2.39	2.33	2.79			
	1.87	1	2	3	4	1011093-BLK1	NA
		2.92	1.56	1.79	1.17		
		5	6	7	8	0.30	NA
		2.39	2.33	2.79			
Manganese	0.29	1	2	3	4	1011094-BLK1	NA
		0.14	0.19	0.16	0.12		
		5	6	7	8	0.32	NA
		0.22	0.18	0.31			

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## Initial and Continuing Calibration Blanks

Analytical Method: 200.7 Analysis Name: ICPOE Tot. Rec Metals-2010Instrument: ICPOE - PE Optima Work Order: Nu C101101Analytical Sequence: 1011101 Total Recoverable Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Manganese	0.29	0.14	0.19	0.16	0.12	1011093-BLK1	NA
		5	6	7	8		
		0.22	0.18	0.31		0.13	NA
		1	2	3	4		
	0.29	0.14	0.19	0.16	0.12	1011092-BLK1	NA
		5	6	7	8		
		0.22	0.18	0.31		0.04	NA
		1	2	3	4		
Sodium	-1.00	-7.75	-1.73	-1.34	-8.07	1011094-BLK1	NA
		5	6	7	8		
		-6.93	-4.88	-4.29		-10.83	NA
		1	2	3	4		
	-1.00	-7.75	-1.73	-1.34	-8.07	-6.09	NA
		5	6	7	8		
		-6.93	-4.88	-4.29		-0.19	NA
		1	2	3	4		
	-1.00	-7.75	-1.73	-1.34	-8.07	1011092-BLK1	NA
		5	6	7	8		
		-6.93	-4.88	-4.29		-0.66	NA
		1	2	3	4		
Zinc	-0.07	1.10	1.94	1.68	1.49	1011093-BLK1	NA
		5	6	7	8		
		2.41	1.06	1.24		-2.53	NA
		1	2	3	4		
	-0.07	1.10	1.94	1.68	1.49	1011094-BLK1	NA
		5	6	7	8		
		2.41	1.06	1.24		0.97	NA
		1	2	3	4		

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method:	<u>200.8</u>	Analysis Name:	<u>ICP-MS Tot. Rec. Metals-2010</u>
Instrument:	<u>ICPMS-PE DRC-II</u>	Work Order:	<u>Nu C101101</u>
Analytical Sequence:	<u>1011102 Total Recoverable</u>	Concentration Units:	<u>ug/L</u>

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL	
		1	2	3	4	NA	1011094-BLK2		
Beryllium	0.04	0.03	0.02	0.04	0.03	NA	1011094-BLK2	0.20	
		5	6	7	8				
		0.04	0.05	0.05		NA	-0.02		
		1	2	3	4				
Cadmium	0.04	0.03	0.02	0.04	0.03	NA	1011092-BLK2	0.20	
		5	6	7	8				
		0.04	0.05	0.05		NA	-0.01		
		1	2	3	4				
Chromium	0.04	0.03	0.02	0.04	0.03	NA	1011093-BLK2	0.20	
		5	6	7	8				
		0.04	0.05	0.05		NA	0.00		
		1	2	3	4				
Vanadium	-0.08	-0.04	-0.05	-0.09	-0.09	NA	1011094-BLK2	2.00	
		5	6	7	8				
		-0.03	-0.02	-0.10		NA	-1.97		
		1	2	3	4				
Zinc	-0.08	-0.04	-0.05	-0.09	-0.09	NA	1011093-BLK2	2.00	
		5	6	7	8				
		-0.03	-0.02	-0.10		NA	-0.65		
		1	2	3	4				
Nickel	-0.08	-0.04	-0.05	-0.09	-0.09	NA	1011092-BLK2	2.00	
		5	6	7	8				
		-0.03	-0.02	-0.10		NA	-0.57		
		1	2	3	4				
Chromium	-0.15	-0.04	-0.02	-0.07	-0.01	NA	1011094-BLK2	1.00	
		5	6	7	8				
		-0.04	0.00	-0.03		NA	0.35		
		1	2	3	4				
Copper	-0.15	-0.04	-0.02	-0.07	-0.01	NA	1011093-BLK2	1.00	
		5	6	7	8				
		-0.04	0.00	-0.03		NA	0.15		
		1	2	3	4				

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #: DG-216

TechLaw Inc., ESAT Region 8  
INORGANIC ANALYSES DATA SHEET  
Initial and Continuing Calibration Blanks

Analytical Method: 200.8 Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-II Work Order: Nu C101101Analytical Sequence: 1011102 Total Recoverable Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL	
		1	2	3	4			
Chromium	-0.15	-0.04	-0.02	-0.07	-0.01	NA	1.00	
		5	6	7	8			
		-0.04	0.00	-0.03		NA		
		1	2	3	4			
Cobalt	0.00	0.00	0.01	0.01	0.01	NA	0.20	
		5	6	7	8			
		0.00	0.01	0.01		NA		
		1	2	3	4			
	0.00	0.00	0.01	0.01	0.01	NA	0.20	
		5	6	7	8			
		0.00	0.01	0.01		NA		
		1	2	3	4			
	0.00	0.00	0.01	0.01	0.01	NA	0.20	
		5	6	7	8			
		0.00	0.01	0.01		NA		
		1	2	3	4			
Nickel	0.01	1	2	3	4	NA	1.00	
		0.01	0.01	0.00	0.01			
		5	6	7	8	NA		
		0.01	0.02	0.02				
	0.01	1	2	3	4	NA	1.00	
		0.01	0.01	0.00	0.01			
		5	6	7	8	NA		
		0.01	0.02	0.02				
	0.01	1	2	3	4	NA	1.00	
		0.01	0.01	0.00	0.01			
		5	6	7	8	NA		
		0.01	0.02	0.02				
Copper	0.32	1	2	3	4	NA	1.00	
		0.26	0.23	0.27	0.24			
		5	6	7	8	NA		
		0.26	0.22	0.21				

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**

TDF #:

**DG-216****TechLaw Inc., ESAT Region 8****INORGANIC ANALYSES DATA SHEET****Initial and Continuing Calibration Blanks**Analytical Method: 200.8Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011102 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Copper	0.32	0.26	0.23	0.27	0.24	NA	1011092-BLK2
		5	6	7	8		
		0.26	0.22	0.21			
		1	2	3	4		
	0.32	0.26	0.23	0.27	0.24	NA	0.08
		5	6	7	8		
		0.26	0.22	0.21			
		1	2	3	4		
Arsenic	0.05	0.04	-0.02	0.03	-0.05	NA	1011094-BLK2
		5	6	7	8		
		0.00	-0.07	-0.01			
		1	2	3	4		
	0.05	0.04	-0.02	0.03	-0.05	NA	-0.30
		5	6	7	8		
		0.00	-0.07	-0.01			
		1	2	3	4		
Selenium	0.05	0.04	-0.02	0.03	-0.05	NA	1011093-BLK2
		5	6	7	8		
		0.00	-0.07	-0.01			
		1	2	3	4		
	-0.03	0.04	-0.02	0.03	-0.05	NA	-0.32
		5	6	7	8		
		0.00	-0.07	-0.01			
		1	2	3	4		
	-0.03	-0.11	-0.15	-0.24	-0.30	NA	-0.47
		5	6	7	8		
		-0.10	-0.29	-0.02			
		1	2	3	4		
	-0.03	-0.11	-0.15	-0.24	-0.30	NA	-0.02
		5	6	7	8		
		-0.10	-0.29	-0.02			
		1	2	3	4		
	-0.03	-0.11	-0.15	-0.24	-0.30	NA	-0.27
		5	6	7	8		
		-0.10	-0.29	-0.02			
		1	2	3	4		

Project Name: Upper Animas - Water - Oct 2010

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## Certificate of Analysis

TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.8Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011102 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Molybdenum	0.18	0.31	0.15	0.11	0.13	NA	1011092-BLK2
		5	6	7	8		
		0.12	0.11	0.09		NA	0.10
		1	2	3	4		
	0.18	0.31	0.15	0.11	0.13	NA	1011093-BLK2
		5	6	7	8		
		0.12	0.11	0.09		NA	0.12
		1	2	3	4		
	0.18	0.31	0.15	0.11	0.13	NA	1011094-BLK2
		5	6	7	8		
		0.12	0.11	0.09		NA	0.00
		1	2	3	4		
	0.13	0.14	0.16	0.12	0.12	NA	1011093-BLK2
		5	6	7	8		
		0.13	0.11	0.12		NA	0.10
		1	2	3	4		
	0.13	0.14	0.16	0.12	0.12	NA	1011092-BLK2
		5	6	7	8		
		0.13	0.11	0.12		NA	0.10
		1	2	3	4		
	0.13	0.14	0.16	0.12	0.12	NA	0.01
		5	6	7	8		
		0.13	0.11	0.12		NA	0.50
		1	2	3	4		
	0.05	-0.02	0.00	0.01	0.03	NA	1011092-BLK2
		5	6	7	8		
		0.02	0.02	0.02		NA	0.12
		1	2	3	4		
	0.05	-0.02	0.00	0.01	0.03	NA	1011093-BLK2
		5	6	7	8		
		0.02	0.02	0.02		NA	0.09
		1	2	3	4		

Project Name: Upper Animas - Water - Oct 2010

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TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.8Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011102 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
		1	2	3	4	NA	1011094-BLK2	
Cadmium	0.05	-0.02	0.00	0.01	0.03	NA	0.00	0.20
		5	6	7	8			
		0.02	0.02	0.02				
		1	2	3	4			
Antimony	0.08	0.06	0.07	0.07	0.08	NA	-0.01	1.00
		5	6	7	8			
		0.08	0.08	0.07				
		1	2	3	4			
	0.08	0.06	0.07	0.07	0.08	NA	0.01	1.00
		5	6	7	8			
		0.08	0.08	0.07				
		1	2	3	4			
	0.08	0.06	0.07	0.07	0.08	NA	0.01	1.00
		5	6	7	8			
		0.08	0.08	0.07				
		1	2	3	4			
Barium	0.01	1	2	3	4	NA	1011094-BLK2	10.00
		0.02	0.01	0.02	0.02			
		5	6	7	8			
		0.02	0.01	0.01				
	0.01	1	2	3	4	NA	1011092-BLK2	10.00
		0.02	0.01	0.02	0.02			
		5	6	7	8			
		0.02	0.01	0.01				
	0.01	1	2	3	4	NA	1011093-BLK2	10.00
		0.02	0.01	0.02	0.02			
		5	6	7	8			
		0.02	0.01	0.01				
Thallium	0.00	1	2	3	4	NA	1011093-BLK2	1.00
		-0.01	0.23	0.03	0.01			
		5	6	7	8			
		0.12	0.03	0.02				

Project Name: Upper Animas Water - Oct 2010

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TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.8Analysis Name: ICP-MS Tot. Rec. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011102 Total RecoverableConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)		PQL
		1	2	3	4	NA	1011094-BLK2	
Thallium	0.00	-0.01	0.23	0.03	0.01	NA	1011094-BLK2	1.00
		5	6	7	8			
		0.12	0.03	0.02				
		1	2	3	4	NA	1011092-BLK2	
Cadmium	0.00	-0.01	0.23	0.03	0.01	NA	1011092-BLK2	1.00
		5	6	7	8			
		0.12	0.03	0.02				
		1	2	3	4	NA	1011094-BLK2	
Lead	0.02	0.01	0.01	0.04	0.01	NA	1011094-BLK2	0.20
		5	6	7	8			
		0.02	0.01	0.01				
		1	2	3	4	NA	1011092-BLK2	
Arsenic	0.02	0.01	0.01	0.04	0.01	NA	1011092-BLK2	0.20
		5	6	7	8			
		0.02	0.01	0.01				
		1	2	3	4	NA	1011093-BLK2	
Chromium	0.02	0.01	0.01	0.04	0.01	NA	1011093-BLK2	0.20
		5	6	7	8			
		0.02	0.01	0.01				
		1	2	3	4	NA	1011093-BLK2	

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TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method: 200.7Analysis Name: ICPOE Diss. Metals-2010Instrument: ICPOE - PE OptimaWork Order Nu: C101101Analytical Sequence: 1011107 DissolvedConcentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL	
		1	2	3	4			
Aluminum	-2.30	-3.23	-2.12			1011103-BLK1	50.00	
		5	6	7	8			
						-2.18		
Calcium	4.22	1	2	3	4	1011103-BLK1	250.00	
		2.78	3.08					
		5	6	7	8	3.57		
Iron	12.95	1	2	3	4	1011103-BLK1	250.00	
		43.82	47.20					
		5	6	7	8	20.80		
Potassium	10.92	1	2	3	4	1011103-BLK1	1,000.00	
		-4.48	9.10					
		5	6	7	8	-0.48		
Magnesium	0.16	1	2	3	4	1011103-BLK1	250.00	
		0.84	1.15					
		5	6	7	8	0.02		
Manganese	0.05	1	2	3	4	1011103-BLK1	5.00	
		-0.01	0.30					
		5	6	7	8	0.00		
Sodium	-5.29	1	2	3	4	1011103-BLK1	500.00	
		-11.79	3.77					
		5	6	7	8	-15.35		
Zinc	0.85	1	2	3	4	1011103-BLK1	20.00	
		0.95	2.00					
		5	6	7	8	0.16		

Project Name: Upper Animas - Water - Oct 2010

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## Certificate of Analysis

TechLaw Inc., ESAT Region 8

## INORGANIC ANALYSES DATA SHEET

## Initial and Continuing Calibration Blanks

Analytical Method:	<u>200.8</u>	Analysis Name:	<u>ICPMS Diss. Metals-2010</u>
Instrument:	<u>ICPMS-PE DRC-II</u>	Work Order: Nu	<u>C101101</u>
Analytical Sequence:	<u>1011108</u> <b>Dissolved</b>	Concentration Units:	<u>ug/L</u>

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Beryllium	0.00	1	2	3	4	1011104-BLK1	NA
		-0.02	0.00	0.01		-0.02	NA
		5	6	7	8		
Vanadium	-0.03	1	2	3	4	1011104-BLK1	NA
		0.01	0.03	0.00		-0.01	NA
		5	6	7	8		
Chromium	-0.07	1	2	3	4	1011104-BLK1	NA
		-0.05	0.08	-0.04		-0.04	NA
		5	6	7	8		
Cobalt	0.00	1	2	3	4	1011104-BLK1	NA
		0.01	0.00	0.01		0.00	NA
		5	6	7	8		
Nickel	0.00	1	2	3	4	1011104-BLK1	NA
		0.01	0.00	0.00		-0.01	NA
		5	6	7	8		
Copper	0.28	1	2	3	4	1011104-BLK1	NA
		0.19	0.27	0.27		0.08	NA
		5	6	7	8		
Arsenic	0.02	1	2	3	4	1011104-BLK1	NA
		0.00	0.05	0.05		0.05	NA
		5	6	7	8		
Selenium	0.01	1	2	3	4	1011104-BLK1	NA
		-0.08	-0.09	-0.03		0.01	NA
		5	6	7	8		

Project Name: Upper Animas - Water - Oct 2010

**Certificate of Analysis**

TDF #:

**DG-216****TechLaw Inc., ESAT Region 8****INORGANIC ANALYSES DATA SHEET****Initial and Continuing Calibration Blanks**Analytical Method: 200.8Analysis Name: ICPMS Diss. Metals-2010Instrument: ICPMS-PE DRC-IIWork Order: Nu C101101Analytical Sequence: 1011108 **Dissolved**Concentration Units: ug/L

Blank criteria = +/- 5x analyte MDL (+/- PQL)

Analyte	Initial Calibration Blank (1 & 2)	Continuing Calibration Blanks				Method Blank (Batch ID)	PQL
		1	2	3	4		
Molybdenum	0.15	0.25	0.12	0.10		1011104-BLK1	NA
		5	6	7	8		
						0.11	NA
Silver	0.11	1	2	3	4	1011104-BLK1	NA
		0.12	0.15	0.12			
		5	6	7	8	0.04	NA
Cadmium	0.01	1	2	3	4	1011104-BLK1	NA
		0.01	-0.01	-0.01			
		5	6	7	8	-0.01	NA
Antimony	0.08	1	2	3	4	1011104-BLK1	NA
		0.07	0.07	0.09			
		5	6	7	8	0.01	NA
Barium	0.00	1	2	3	4	1011104-BLK1	NA
		0.03	0.01	0.00			
		5	6	7	8	0.00	NA
Thallium	-0.01	1	2	3	4	1011104-BLK1	NA
		-0.02	-0.02	-0.02			
		5	6	7	8	-0.03	NA
Lead	0.01	1	2	3	4	1011104-BLK1	NA
		0.00	0.00	0.00			
		5	6	7	8	-0.01	NA

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1011097

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Antimony	50.0	49.70	99.4	1			2			3		
				50.0	49.42	98.8	50.0	50.03	100.1	50.0	49.55	99.1
				4			5			6		
				50.0	48.91	97.8						
				7			8			9		
				1			2			3		
				50.0	50.41	100.8	50.0	50.86	101.7	50.0	51.01	102.0
				4			5			6		
Arsenic	50.0	51.71	103.4	50.0	50.25	100.5						
				7			8			9		
				1			2			3		
				50.0	51.27	102.5	50.0	51.81	103.6	50.0	51.56	103.1
				4			5			6		
				50.0	51.70	103.4						
				7			8			9		
Barium	50.0	50.82	101.6	1			2			3		
				50.0	51.81	103.6	50.0	51.56	103.1			
				4			5			6		
				50.0	51.70	103.4						
				7			8			9		
				1			2			3		
				50.0	49.84	99.7	50.0	55.00	110.0	50.0	55.17	110.3
				4			5			6		
Beryllium	50.0	50.05	100.1	50.0	52.84	105.7						
				7			8			9		
				1			2			3		
				50.0	49.79	99.6	50.0	50.72	101.4	50.0	50.42	100.8
				4			5			6		
				50.0	49.55	99.1						
				7			8			9		
Cadmium	50.0	49.36	98.7	1			2			3		
				50.0	49.04	98.1	50.0	48.62	97.2			
				4			5			6		
				50.0	49.56	99.1						
				7			8			9		
				1			2			3		
				50.0	49.13	98.3	50.0	49.04	98.1	50.0	48.62	97.2
				4			5			6		
Chromium	50.0	49.51	99.0	50.0	49.56	99.1						
				7			8			9		
				1			2			3		
				50.0	49.56	99.1						

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1011097

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Cobalt	50.0	50.20	100.4	1			2			3		
				50.0	49.74	99.5	50.0	51.16	102.3	50.0	49.51	99.0
				4			5			6		
				50.0	48.16	96.3						
				7			8			9		
				1			2			3		
				50.0	48.17	96.3	50.0	48.17	96.3	50.0	47.68	95.4
				4			5			6		
Copper	50.0	49.54	99.1	50.0	46.32	92.6						
				7			8			9		
				1			2			3		
				50.0	53.02	106.0	50.0	51.99	104.0	50.0	53.33	106.7
				4			5			6		
				50.0	54.25	108.5						
				7			8			9		
Lead	50.0	49.38	98.8	1			2			3		
				50.0	53.02	106.0	50.0	51.99	104.0	50.0	53.33	106.7
				4			5			6		
				50.0	54.25	108.5						
				7			8			9		
				1			2			3		
				50.0	50.62	101.2	50.0	50.17	100.3	50.0	51.52	103.0
				4			5			6		
Molybdenum	50.0	49.79	99.6	50.0	50.44	100.9						
				7			8			9		
				1			2			3		
				50.0	48.88	97.8	50.0	51.03	102.1	50.0	48.88	97.8
				4			5			6		
				50.0	48.28	96.6						
				7			8			9		
Nickel	50.0	50.68	101.4	1			2			3		
				50.0	48.88	97.8	50.0	51.03	102.1	50.0	48.88	97.8
				4			5			6		
				50.0	48.28	96.6						
				7			8			9		
				1			2			3		
				50.0	50.47	100.9	50.0	51.75	103.5	50.0	52.30	104.6
				4			5			6		
Selenium	250	253.2	101.3	50.0	50.01	100.0						
				7			8			9		
				1			2			3		
				50.0	51.75	103.5	50.0	52.30	104.6			

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1011097

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Silver	50.0	52.02	104.0	1			2			3		
				50.0	51.29	102.6	50.0	50.59	101.2	50.0	50.82	101.6
				4			5			6		
				50.0	51.19	102.4						
				7			8			9		
				1			2			3		
				50.0	52.92	105.8	50.0	51.87	103.7	50.0	52.88	105.8
				4			5			6		
Thallium	50.0	48.68	97.4	50.0	53.87	107.7						
				7			8			9		
				1			2			3		
				50.0	49.36	98.7	50.0	51.30	102.6	50.0	49.66	99.3
				4			5			6		
				50.0	49.04	98.1						
				7			8			9		
Vanadium	50.0	50.16	100.3									

Metals - ICV &amp; CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPOE - PE Optima

Method: 200.7

Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1011098

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Aluminum	1000	1012	101.2	1			2			3		
				12500	12830	102.6	12500	12820	102.6	12500	12890	103.1
				4			5			6		
				12500	12770	102.2						
				7			8			9		
				1			2			3		
				12500	12720	101.8	12500	12730	101.8	12500	12820	102.6
				4			5			6		
Calcium	1000	960.0	96.0	12500	12730	101.8						
				7			8			9		
				1			2			3		
				12500	12930	103.4	12500	12760	102.1	12500	12990	103.9
				4			5			6		
				12500	12780	102.2						
				7			8			9		
Iron	1000	979.8	98.0	1			2			3		
				12500	12930	103.4	12500	12760	102.1	12500	12990	103.9
				4			5			6		
				12500	12780	102.2						
				7			8			9		
				1			2			3		
				12500	12880	103.0	12500	12900	103.2	12500	12980	103.8
				4			5			6		
Magnesium	1000	1017	101.7	12500	12850	102.8						
				7			8			9		
				1			2			3		
				1000	1036	103.6	1000	1033	103.3	1000	1032	103.2
				4			5			6		
				1000	1031	103.1						
				7			8			9		
Manganese	1000	1042	104.2	1			2			3		
				1000	1036	103.6	1000	1033	103.3	1000	1032	103.2
				4			5			6		
				1000	1031	103.1						
				7			8			9		
				1			2			3		
				25000	25540	102.2	25000	25570	102.3	25000	25750	103.0
				4			5			6		
Potassium	5000	4913	98.3	25000	25470	101.9						
				7			8			9		

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #: DG-216

TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPOE - PE Optima

Method: 200.7

Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1011098

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)									
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R	
Sodium	1000	980.9	98.1	1	12500	12840	102.7	12500	12840	102.7	12500	12920	103.4
				4			5			6			
				12500	12770	102.2							
				7			8			9			
				1			2			3			
				2500	2565	102.6	2500	2585	103.4	2500	2590	103.6	
Zinc	1000	1009	100.9	4			5			6			
				2500	2581	103.2							
				7			8			9			

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPOE - PE Optima      Method: 200.7      Analysis Name: ICPOE Tot. Rec Metals-2010  
 Sequence: 1011101      Work Order: C101101      Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Aluminum	1000	1044	104.4	1			2			3		
				12500	12930	103.4	12500	12920	103.4	12500	12930	103.4
				4			5			6		
				12500	12810	102.5	12500	12860	102.9	12500	12790	102.3
				7			8			9		
				12500	12720	101.8						
Calcium	1000	989.5	99.0	1			2			3		
				12500	12940	103.5	12500	12870	103.0	12500	12770	102.2
				4			5			6		
				12500	12640	101.1	12500	12670	101.4	12500	12620	101.0
				7			8			9		
				12500	12700	101.6						
Iron	1000	994.9	99.5	1			2			3		
				12500	13070	104.6	12500	12870	103.0	12500	12830	102.6
				4			5			6		
				12500	12680	101.4	12500	12720	101.8	12500	12640	101.1
				7			8			9		
				12500	12740	101.9						
Magnesium	1000	1048	104.8	1			2			3		
				12500	13040	104.3	12500	12990	103.9	12500	12960	103.7
				4			5			6		
				12500	12880	103.0	12500	12880	103.0	12500	12830	102.6
				7			8			9		
				12500	12770	102.2						
Manganese	1000	1013	101.3	1			2			3		
				1000	995.6	99.6	1000	993.7	99.4	1000	978.6	97.9
				4			5			6		
				1000	976.3	97.6	1000	967.2	96.7	1000	963.6	96.4
				7			8			9		
				1000	964.8	96.5						
Potassium	5000	5056	101.1	1			2			3		
				25000	25530	102.1	25000	25700	102.8	25000	25660	102.6
				4			5			6		
				25000	25420	101.7	25000	25510	102.0	25000	25260	101.0
				7			8			9		
				25000	25090	100.4						

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPOE - PE Optima

Method: 200.7

Analysis Name: ICPOE Tot. Rec Metals-2010

Sequence: 1011101

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)									
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R	
Sodium	1000	1000	100.0	1			2			3			
				12500	12780	102.2	12500	12900	103.2	12500	12910	103.3	
				4			5			6			
				12500	12790	102.3	12500	12860	102.9	12500	12730	101.8	
				7			8			9			
				12500	12690	101.5							
	Zinc	1000	975.5	97.6	1		2			3			
					2500	2402	96.1	2500	2434	97.4	2500	2426	97.0
					4		5			6			
					2500	2413	96.5	2500	2425	97.0	2500	2422	96.9
					7		8			9			
					2500	2441	97.6						

Metals - ICV &amp; CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1011102

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Antimony	50.0	49.46	98.9	1			2			3		
				50.0	49.24	98.5	50.0	50.12	100.2	50.0	48.75	97.5
				4			5			6		
				50.0	48.66	97.3	50.0	48.62	97.2	50.0	47.67	95.3
				7			8			9		
				50.0	47.96	95.9						
Arsenic	50.0	51.22	102.4	1			2			3		
				50.0	50.59	101.2	50.0	51.13	102.3	50.0	50.69	101.4
				4			5			6		
				50.0	49.21	98.4	50.0	49.04	98.1	50.0	49.55	99.1
				7			8			9		
				50.0	49.72	99.4						
Barium	50.0	51.11	102.2	1			2			3		
				50.0	49.22	98.4	50.0	50.20	100.4	50.0	47.10	94.2
				4			5			6		
				50.0	47.17	94.3	50.0	47.17	94.3	50.0	47.13	94.3
				7			8			9		
				50.0	45.83	91.7						
Beryllium	50.0	50.69	101.4	1			2			3		
				50.0	49.51	99.0	50.0	51.09	102.2	50.0	48.76	97.5
				4			5			6		
				50.0	47.50	95.0	50.0	48.32	96.6	50.0	48.26	96.5
				7			8			9		
				50.0	48.49	97.0						
Cadmium	50.0	49.14	98.3	1			2			3		
				50.0	49.77	99.5	50.0	50.82	101.6	50.0	48.53	97.1
				4			5			6		
				50.0	49.03	98.1	50.0	48.38	96.8	50.0	48.87	97.7
				7			8			9		
				50.0	49.90	99.8						
Chromium	50.0	46.54	93.1	1			2			3		
				50.0	47.64	95.3	50.0	48.85	97.7	50.0	47.64	95.3
				4			5			6		
				50.0	48.46	96.9	50.0	46.88	93.8	50.0	48.59	97.2
				7			8			9		
				50.0	47.20	94.4						

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1011102

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Cobalt	50.0	48.53	97.1	1			2			3		
				50.0	50.86	101.7	50.0	51.49	103.0	50.0	51.03	102.1
				4			5			6		
				50.0	51.19	102.4	50.0	50.07	100.1	50.0	52.25	104.5
				7			8			9		
Copper	50.0	50.15	100.3	50.0	51.26	102.5						
				1			2			3		
				50.0	52.47	104.9	50.0	54.68	109.4	50.0	51.96	103.9
				4			5			6		
				50.0	51.83	103.7	50.0	53.01	106.0	50.0	52.54	105.1
Lead	50.0	49.02	98.0	7			8			9		
				50.0	53.76	107.5						
				1			2			3		
				50.0	52.04	104.1	50.0	54.39	108.8	50.0	51.55	103.1
				4			5			6		
Molybdenum	50.0	48.71	97.4	50.0	53.12	106.2	50.0	54.25	108.5	50.0	52.59	105.2
				7			8			9		
				50.0	54.93	109.9						
				1			2			3		
				50.0	48.75	97.5	50.0	49.47	98.9	50.0	47.53	95.1
Nickel	50.0	47.31	94.6	4			5			6		
				50.0	49.21	98.4	50.0	47.56	95.1	50.0	49.15	98.3
				7			8			9		
				50.0	49.92	99.8						
				1			2			3		
Selenium	250	242.0	96.8	50.0	50.04	100.1	50.0	51.18	102.4	50.0	48.37	96.7
				4			5			6		
				50.0	49.40	98.8	50.0	49.45	98.9	50.0	50.07	100.1
				7			8			9		
				50.0	48.87	97.7						
				1			2			3		
				50.0	48.64	97.3	50.0	49.05	98.1	50.0	48.71	97.4
				4			5			6		
				50.0	47.52	95.0	50.0	48.57	97.1	50.0	47.24	94.5
				7			8			9		
				50.0	46.07	92.1						

Project Name: Upper Animas - Water - Oct 2010

## Certificate of Analysis

TDF #:

DG-216

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICP-MS Tot. Rec. Metals-2010

Sequence: 1011102

Work Order: C101101

Units: ug/L

Total Recoverable Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Silver	50.0	50.27	100.5	1			2			3		
				50.0	50.15	100.3	50.0	50.60	101.2	50.0	48.95	97.9
				4			5			6		
				50.0	49.07	98.1	50.0	48.85	97.7	50.0	48.77	97.5
				7			8			9		
				50.0	48.28	96.6						
				1			2			3		
				50.0	51.63	103.3	50.0	53.94	107.9	50.0	51.36	102.7
Thallium	50.0	48.62	97.2	4			5			6		
				50.0	52.43	104.9	50.0	51.81	103.6	50.0	52.99	106.0
				7			8			9		
				50.0	54.17	108.3						
				1			2			3		
	50.0	48.90	97.8	50.0	48.23	96.5	50.0	51.02	102.0	50.0	48.61	97.2
				4			5			6		
				50.0	48.84	97.7	50.0	48.11	96.2	50.0	49.51	99.0
				7			8			9		
				50.0	48.43	96.9						

Metals - ICV &amp; CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPOE - PE Optima

Method: 200.7

Analysis Name: ICPOE Diss. Metals-2010

Sequence: 1011107

Work Order: C101101

Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)									
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R	
Aluminum	1000	986.3	98.6	1	12500	12830	102.6	12500	12940	103.5	1	12500	12830
				2	12500	12830	102.6	12500	12940	103.5	2	12500	12830
				3	12500	12830	102.6	12500	12940	103.5	3	12500	12830
				4	12500	12830	102.6	12500	12940	103.5	4	12500	12830
				5	12500	12830	102.6	12500	12940	103.5	5	12500	12830
				6	12500	12830	102.6	12500	12940	103.5	6	12500	12830
				7	12500	12830	102.6	12500	12940	103.5	7	12500	12830
				8	12500	12830	102.6	12500	12940	103.5	8	12500	12830
				9	12500	12830	102.6	12500	12940	103.5	9	12500	12830
Calcium	1000	935.2	93.5	1	12500	12800	102.4	12500	12850	102.8	1	12500	12800
				2	12500	12800	102.4	12500	12850	102.8	2	12500	12800
				3	12500	12800	102.4	12500	12850	102.8	3	12500	12800
				4	12500	12800	102.4	12500	12850	102.8	4	12500	12800
				5	12500	12800	102.4	12500	12850	102.8	5	12500	12800
				6	12500	12800	102.4	12500	12850	102.8	6	12500	12800
				7	12500	12800	102.4	12500	12850	102.8	7	12500	12800
				8	12500	12800	102.4	12500	12850	102.8	8	12500	12800
				9	12500	12800	102.4	12500	12850	102.8	9	12500	12800
Iron	1000	956.9	95.7	1	12500	12910	103.3	12500	12880	103.0	1	12500	12910
				2	12500	12910	103.3	12500	12880	103.0	2	12500	12910
				3	12500	12910	103.3	12500	12880	103.0	3	12500	12910
				4	12500	12910	103.3	12500	12880	103.0	4	12500	12910
				5	12500	12910	103.3	12500	12880	103.0	5	12500	12910
				6	12500	12910	103.3	12500	12880	103.0	6	12500	12910
				7	12500	12910	103.3	12500	12880	103.0	7	12500	12910
				8	12500	12910	103.3	12500	12880	103.0	8	12500	12910
				9	12500	12910	103.3	12500	12880	103.0	9	12500	12910
Magnesium	1000	991.9	99.2	1	12500	12910	103.3	12500	12980	103.8	1	12500	12910
				2	12500	12910	103.3	12500	12980	103.8	2	12500	12910
				3	12500	12910	103.3	12500	12980	103.8	3	12500	12910
				4	12500	12910	103.3	12500	12980	103.8	4	12500	12910
				5	12500	12910	103.3	12500	12980	103.8	5	12500	12910
				6	12500	12910	103.3	12500	12980	103.8	6	12500	12910
				7	12500	12910	103.3	12500	12980	103.8	7	12500	12910
				8	12500	12910	103.3	12500	12980	103.8	8	12500	12910
				9	12500	12910	103.3	12500	12980	103.8	9	12500	12910
Manganese	1000	1029	102.9	1	1000	1029	102.9	1000	1037	103.7	1	1000	1029
				2	1000	1029	102.9	1000	1037	103.7	2	1000	1029
				3	1000	1029	102.9	1000	1037	103.7	3	1000	1029
				4	1000	1029	102.9	1000	1037	103.7	4	1000	1029
				5	1000	1029	102.9	1000	1037	103.7	5	1000	1029
				6	1000	1029	102.9	1000	1037	103.7	6	1000	1029
				7	1000	1029	102.9	1000	1037	103.7	7	1000	1029
				8	1000	1029	102.9	1000	1037	103.7	8	1000	1029
				9	1000	1029	102.9	1000	1037	103.7	9	1000	1029
Potassium	5000	4778	95.6	1	25000	25510	102.0	25000	25780	103.1	1	25000	25510
				2	25000	25510	102.0	25000	25780	103.1	2	25000	25510
				3	25000	25510	102.0	25000	25780	103.1	3	25000	25510
				4	25000	25510	102.0	25000	25780	103.1	4	25000	25510
				5	25000	25510	102.0	25000	25780	103.1	5	25000	25510
				6	25000	25510	102.0	25000	25780	103.1	6	25000	25510
				7	25000	25510	102.0	25000	25780	103.1	7	25000	25510
				8	25000	25510	102.0	25000	25780	103.1	8	25000	25510
				9	25000	25510	102.0	25000	25780	103.1	9	25000	25510

Project Name: Upper Animas - Water - Oct 2010

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TechLaw, Inc. - ESAT Region 8

Initial and Continuing Calibration Verification Results

ICPOE - PE Optima

Method: 200.7

Analysis Name: ICPOE Diss. Metals-2010

Sequence: 1011107

Work Order: C101101

Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Sodium	1000	943.7	94.4	1			2			3		
				12500	12750	102.0	12500	12900	103.2			
				4			5			6		
				7			8			9		
				1			2			3		
				2500	2563	102.5	2500	2546	101.8			
Zinc	1000	997.9	99.8	4			5			6		
				7			8			9		
				1			2			3		
				2500	2563	102.5	2500	2546	101.8			
				4			5			6		
				7			8			9		

Metals - ICV & CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1011108

Work Order: C101101

Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Antimony	50.0	49.4	98.8	1			2			3		
				50.0	48.2	96.4	50.0	48.0	96.0	50.0	48.0	96.0
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	50.5	101.0	50.0	49.1	98.2	50.0	48.9	97.8
				4			5			6		
Arsenic	50.0	54.0	108.0									
				7			8			9		
				1			2			3		
				50.0	47.1	94.2	50.0	45.7	91.4	50.0	45.1	90.2
				4			5			6		
				7			8			9		
Barium	50.0	50.5	101.0	1			2			3		
				50.0	47.1	94.2	50.0	45.7	91.4	50.0	45.1	90.2
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	46.7	93.4	50.0	46.3	92.6	50.0	45.5	91.0
				4			5			6		
Beryllium	50.0	48.2	96.4									
				7			8			9		
				1			2			3		
				50.0	47.5	95.0	50.0	47.2	94.4	50.0	46.4	92.8
				4			5			6		
				7			8			9		
Cadmium	50.0	49.6	99.2	1			2			3		
				50.0	47.5	95.0	50.0	47.2	94.4	50.0	46.4	92.8
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	47.8	95.6	50.0	50.4	100.8	50.0	45.8	91.6
				4			5			6		
Chromium	50.0	50.3	100.6									
				7			8			9		

## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1011108

Work Order: C101101

Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Cobalt	50.0	50.4	100.8	1			2			3		
				50.0	49.9	99.8	50.0	50.8	101.6	50.0	48.5	97.0
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	49.6	99.2	50.0	50.4	100.8	50.0	47.3	94.6
				4			5			6		
				7			8			9		
				1			2			3		
Copper	50.0	51.3	102.6	50.0	50.9	101.8	50.0	53.4	106.8	50.0	51.3	102.6
				4			5			6		
				7			8			9		
Lead	50.0	50.5	101.0	50.0	50.9	101.8	50.0	53.4	106.8	50.0	51.3	102.6
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	47.6	95.2	50.0	46.6	93.2	50.0	45.8	91.6
				4			5			6		
				7			8			9		
Molybdenum	50.0	47.6	95.2	50.0	47.6	95.2	50.0	46.6	93.2	50.0	45.8	91.6
				4			5			6		
				7			8			9		
Nickel	50.0	50.3	100.6	50.0	47.8	95.6	50.0	49.2	98.4	50.0	46.9	93.8
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	48.9	97.8	50.0	49.3	98.6	50.0	48.4	96.8
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	48.9	97.8	50.0	49.3	98.6	50.0	48.4	96.8

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## TechLaw, Inc. - ESAT Region 8

## Initial and Continuing Calibration Verification Results

ICPMS-PE DRC-II

Method: 200.8

Analysis Name: ICPMS Diss. Metals-2010

Sequence: 1011108

Work Order: C101101

Units: ug/L

Dissolved Analyte	Initial (ICV1, ICV2)			Continuing Calibration Verification Standards (CCVs)								
	True	Found	%R	True	Found	%R	True	Found	%R	True	Found	%R
Silver	50.0	51.9	103.8	1			2			3		
				50.0	47.7	95.4	50.0	47.0	94.0	50.0	47.1	94.2
				4			5			6		
				7			8			9		
				1			2			3		
				50.0	52.2	104.4	50.0	52.1	104.2	50.0	51.6	103.2
				4			5			6		
Thallium	50.0	50.0	100.0									
				7			8			9		
				1			2			3		
				50.0	46.0	92.0	50.0	46.9	93.8	50.0	45.4	90.8
				4			5			6		
				7			8			9		
Vanadium	50.0	48.8	97.6									
				7			8			9		
				1			2			3		
				50.0	46.0	92.0	50.0	46.9	93.8	50.0	45.4	90.8
				4			5			6		
				7			8			9		

Metals - ICV &amp; CCV %R Criteria = 90 - 110%, Classical Chemistry %R Criteria - ICV = 90 - 110%R, CCV = 80 - 120%R.

## TechLaw, Inc. - ESAT Region 8

## ICP Interference Check Sample

## ICPMS-PE DRC-II

<u>Analyte</u>	<u>Check Sample</u>	<u>Result*</u>	<u>Units</u>	<u>True</u>	<u>%R</u>	<u>POL</u>
Sequence: 1011097	Analysis: ICP-MS Tot. Rec. Metals-2010					
Antimony	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Arsenic	IFA1	0.0	ug/L			2.00
	IFB1	20.3	ug/L	20	102	2.00
Barium	IFA1	0.2	ug/L			10.0
	IFB1	0.4	ug/L			10.0
Beryllium	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Cadmium	IFA1	0.0	ug/L			0.200
	IFB1	20.2	ug/L	20	101	0.200
Chromium	IFA1	0.1	ug/L			1.00
	IFB1	21.1	ug/L	20	106	1.00
Cobalt	IFA1	0.0	ug/L			0.200
	IFB1	20.8	ug/L	20	104	0.200
Copper	IFA1	0.3	ug/L			1.00
	IFB1	21.6	ug/L	20	108	1.00
Lead	IFA1	0.1	ug/L			0.200
	IFB1	0.1	ug/L			0.200
Molybdenum	IFA1	196.2	ug/L	200	98	0.200
	IFB1	203.1	ug/L	200	102	0.200
Nickel	IFA1	-0.2	ug/L			1.00
	IFB1	21.2	ug/L	20	106	1.00
Selenium	IFA1	0.1	ug/L			1.00
	IFB1	0.1	ug/L			1.00
Silver	IFA1	0.0	ug/L			0.500
	IFB1	20.3	ug/L	20	102	0.500
Thallium	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Vanadium	IFA1	0.0	ug/L			2.00
	IFB1	-0.3	ug/L			2.00

\*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

Project Name: Upper Animas - Water - Oct 2010

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TechLaw, Inc. - ESAT Region 8

ICP Interference Check Sample

ICPMS-PE DRC-II

<u>Analyte</u>	<u>Check Sample</u>	<u>Result*</u>	<u>Units</u>	<u>True</u>	<u>%R</u>	<u>PQL</u>
Sequence: 1011102	Analysis: ICP-MS Tot. Rec. Metals-2010					
Antimony	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Arsenic	IFA1	0.0	ug/L			2.00
	IFB1	20.7	ug/L	20	103	2.00
Barium	IFA1	0.2	ug/L			10.0
	IFB1	0.4	ug/L			10.0
Beryllium	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Cadmium	IFA1	0.1	ug/L			0.200
	IFB1	20.3	ug/L	20	101	0.200
Chromium	IFA1	0.0	ug/L			1.00
	IFB1	19.6	ug/L	20	98	1.00
Cobalt	IFA1	0.0	ug/L			0.200
	IFB1	20.5	ug/L	20	103	0.200
Copper	IFA1	0.6	ug/L			1.00
	IFB1	22.9	ug/L	20	114	1.00
Lead	IFA1	0.1	ug/L			0.200
	IFB1	0.1	ug/L			0.200
Molybdenum	IFA1	192.3	ug/L	200	96	0.200
	IFB1	198.3	ug/L	200	99	0.200
Nickel	IFA1	-0.2	ug/L			1.00
	IFB1	19.8	ug/L	20	99	1.00
Selenium	IFA1	-0.1	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Silver	IFA1	0.0	ug/L			0.500
	IFB1	19.8	ug/L	20	99	0.500
Thallium	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Vanadium	IFA1	-0.2	ug/L			2.00
	IFB1	-0.3	ug/L			2.00

\*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

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ICP Interference Check Sample

ICPMS-PE DRC-II

<u>Analyte</u>	<u>Check Sample</u>	<u>Result*</u>	<u>Units</u>	<u>True</u>	<u>%R</u>	<u>PQL</u>
Sequence: 1011108	Analysis: ICPMS Diss. Metals-2010					
Antimony	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Arsenic	IFA1	0.0	ug/L			2.00
	IFB1	19.4	ug/L	20	97	2.00
Barium	IFA1	0.2	ug/L			10.0
	IFB1	0.4	ug/L			10.0
Beryllium	IFA1	0.0	ug/L			0.200
	IFB1	0.0	ug/L			0.200
Cadmium	IFA1	0.0	ug/L			0.200
	IFB1	20.1	ug/L	20	101	0.200
Chromium	IFA1	0.1	ug/L			1.00
	IFB1	20.4	ug/L	20	102	1.00
Cobalt	IFA1	0.0	ug/L			0.200
	IFB1	18.9	ug/L	20	94	0.200
Copper	IFA1	0.5	ug/L			1.00
	IFB1	21.6	ug/L	20	108	1.00
Lead	IFA1	0.1	ug/L			0.200
	IFB1	0.1	ug/L			0.200
Molybdenum	IFA1	181.0	ug/L	200	90	0.200
	IFB1	193.4	ug/L	200	97	0.200
Nickel	IFA1	-0.2	ug/L			1.00
	IFB1	19.6	ug/L	20	98	1.00
Selenium	IFA1	0.1	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Silver	IFA1	0.0	ug/L			0.500
	IFB1	19.4	ug/L	20	97	0.500
Thallium	IFA1	0.0	ug/L			1.00
	IFB1	0.0	ug/L			1.00
Vanadium	IFA1	-0.1	ug/L			2.00
	IFB1	-0.5	ug/L			2.00

\*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

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ICP Interference Check Sample

ICPOE - PE Optima

<u>Analyte</u>	<u>Check Sample</u>	<u>Result*</u>	<u>Units</u>	<u>True</u>	<u>%R</u>	<u>PQL</u>
Sequence: 1011098	Analysis: ICPOE Tot. Rec Metals-2010					
Aluminum	IFA1	62,820.7	ug/L	60,000	105	50.0
	IFB1	62,031.0	ug/L	60,000	103	50.0
Calcium	IFA1	298,890.7	ug/L	300,000	100	250
	IFB1	293,042.5	ug/L	300,000	98	250
Iron	IFA1	239,902.7	ug/L	250,000	96	250
	IFB1	238,382.4	ug/L	250,000	95	250
Magnesium	IFA1	147,130.5	ug/L	150,000	98	250
	IFB1	145,467.7	ug/L	150,000	97	250
Manganese	IFA1	1.7	ug/L		5.00	
	IFB1	199.1	ug/L	200	100	5.00
Potassium	IFA1	-111.6	ug/L		1000	
	IFB1	20,568.1	ug/L	20,000	103	1000
Sodium	IFA1	52,209.2	ug/L	50,000	104	500
	IFB1	51,651.8	ug/L	50,000	103	500
Zinc	IFA1	1.9	ug/L		20.0	
	IFB1	280.9	ug/L	300	94	20.0

\*Criteria = 80-120% of True Value or +/- PQL

See raw data for complete analyte list and results.

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ICP Interference Check Sample

ICPOE - PE Optima

Analyte	Check Sample	Result*	Units	True	%R	PQL
Sequence: 1011101	Analysis: ICPOE Tot. Rec Metals-2010					
Aluminum	IFA1	62,938.1	ug/L	60,000	105	50.0
	IFB1	63,892.7	ug/L	60,000	106	50.0
Calcium	IFA1	300,485.5	ug/L	300,000	100	250
	IFB1	303,381.5	ug/L	300,000	101	250
Iron	IFA1	242,715.2	ug/L	250,000	97	250
	IFB1	247,066.3	ug/L	250,000	99	250
Magnesium	IFA1	147,911.6	ug/L	150,000	99	250
	IFB1	150,315.9	ug/L	150,000	100	250
Manganese	IFA1	1.3	ug/L			5.00
	IFB1	192.8	ug/L	200	96	5.00
Potassium	IFA1	-84.5	ug/L			1000
	IFB1	21,187.5	ug/L	20,000	106	1000
Sodium	IFA1	52,243.4	ug/L	50,000	104	500
	IFB1	52,820.4	ug/L	50,000	106	500
Zinc	IFA1	1.8	ug/L			20.0
	IFB1	270.3	ug/L	300	90	20.0

\*Criteria ≈ 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

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TechLaw, Inc. - ESAT Region 8

ICP Interference Check Sample

ICPOE - PE Optima

<u>Analyte</u>	<u>Check Sample</u>	<u>Result*</u>	<u>Units</u>	<u>True</u>	<u>%R</u>	<u>PQL</u>
Sequence: 1011107	Analysis: ICPOE Diss. Metals-2010					
Aluminum	IFA1	61,845.9	ug/L	60,000	103	50.0
	IFB1	63,216.9	ug/L	60,000	105	50.0
Calcium	IFA1	295,113.4	ug/L	300,000	98	250
	IFB1	300,748.8	ug/L	300,000	100	250
Iron	IFA1	237,169.7	ug/L	250,000	95	250
	IFB1	239,464.2	ug/L	250,000	96	250
Magnesium	IFA1	144,935.3	ug/L	150,000	97	250
	IFB1	148,314.9	ug/L	150,000	99	250
Manganese	IFA1	1.3	ug/L			5.00
	IFB1	197.1	ug/L	200	99	5.00
Potassium	IFA1	-82.2	ug/L			1000
	IFB1	20,605.1	ug/L	20,000	103	1000
Sodium	IFA1	51,262.7	ug/L	50,000	103	500
	IFB1	52,135.6	ug/L	50,000	104	500
Zinc	IFA1	2.5	ug/L			20.0
	IFB1	277.3	ug/L	300	92	20.0

\*Criteria = 80-120%R of True Value or +/- PQL

See raw data for complete analyte list and results.

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**TechLaw, Inc. - ESAT Region 8**  
**Detection Limit (PQL) Standard**  
**ICPMS-PE DRC-II**

Metals (Dissolved) by EPA 200/7000 Series Methods

Sequence: 1011108

<u>Analyte</u>	<u>True</u>	<u>Found</u>	<u>%R</u>	<u>Units</u>
Antimony	1.00	0.954	95	ug/L
Arsenic	2.00	1.88	94	ug/L
Barium	0.500	0.493	99	ug/L
Beryllium	0.200	0.196	98	ug/L
Cadmium	0.200	0.198	99	ug/L
Chromium	1.00	0.806	81	ug/L
Cobalt	0.200	0.199	100	ug/L
Copper	1.00	1.17	117	ug/L
Lead	0.200	0.191	96	ug/L
Molybdenum	0.200	0.233	116	ug/L
Nickel	1.00	0.932	93	ug/L
Selenium	1.00	0.840	84	ug/L
Silver	0.500	0.494	99	ug/L
Thallium	0.200	0.157	79	ug/L
Vanadium	2.00	1.89	94	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, &amp; Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg &amp; Na.

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**TechLaw, Inc. - ESAT Region 8**  
**Detection Limit (PQL) Standard**  
**ICPOE - PE Optima**

Metals (Dissolved) by EPA 200/7000 Series Methods

Sequence: 1011107

<u>Analyte</u>	<u>True</u>	<u>Found</u>	<u>%R</u>	<u>Units</u>
Aluminum	100	95.87	96	ug/L
Calcium	250	251.8	101	ug/L
Iron	100	109.4	109	ug/L
Magnesium	1000	1037	104	ug/L
Manganese	10.0	10.30	103	ug/L
Potassium	1000	1030	103	ug/L
Sodium	1000	1036	104	ug/L
Zinc	50.0	52.20	104	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

**TechLaw, Inc. - ESAT Region 8**  
**Detection Limit (PQL) Standard**  
**ICPMS-PE DRC-II**

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1011097.

<b>Analyte</b>	<b>True</b>	<b>Found</b>	<b>%R</b>	<b>Units</b>
Antimony	1.00	0.9442	94	ug/L
Arsenic	2.00	1.945	97	ug/L
Barium	0.500	0.4890	98	ug/L
Beryllium	0.200	0.1747	87	ug/L
Cadmium	0.200	0.2208	110	ug/L
Chromium	1.00	0.8480	85	ug/L
Cobalt	0.200	0.1923	96	ug/L
Copper	1.00	0.9579	96	ug/L
Lead	0.200	0.1762	88	ug/L
Molybdenum	0.200	0.2329	116	ug/L
Nickel	1.00	0.9905	99	ug/L
Selenium	1.00	0.8467	85	ug/L
Silver	0.500	0.4873	97	ug/L
Thallium	0.200	0.1764	88	ug/L
Vanadium	2.00	1.863	93	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #:

DG-216

**TechLaw, Inc. - ESAT Region 8**  
**Detection Limit (PQL) Standard**  
**ICPMS-PE DRC-II**

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1011102

<u>Analyte</u>	<u>True</u>	<u>Found</u>	<u>%R</u>	<u>Units</u>
Antimony	1.00	0.9559	96	ug/L
Arsenic	2.00	1.956	98	ug/L
Barium	0.500	0.4714	94	ug/L
Beryllium	0.200	0.2410	120	ug/L
Cadmium	0.200	0.1822	91	ug/L
Chromium	1.00	0.9195	92	ug/L
Cobalt	0.200	0.1806	90	ug/L
Copper	1.00	1.130	113	ug/L
Lead	0.200	0.1665	83	ug/L
Molybdenum	0.200	0.2324	116	ug/L
Nickel	1.00	0.9306	93	ug/L
Selenium	1.00	0.7871	79	ug/L
Silver	0.500	0.5214	104	ug/L
Thallium	0.200	0.1620	81	ug/L
Vanadium	2.00	1.971	99	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #:

DG-216

**TechLaw, Inc. - ESAT Region 8  
Detection Limit (PQL) Standard  
ICPOE - PE Optima**

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1011098

<u>Analyte</u>	<u>True</u>	<u>Found</u>	<u>%R</u>	<u>Units</u>
Aluminum	100	107.7	108	ug/L
Calcium	250	257.1	103	ug/L
Iron	100	108.3	108	ug/L
Magnesium	1000	1050	105	ug/L
Manganese	10.0	10.51	105	ug/L
Potassium	1000	1054	105	ug/L
Sodium	1000	1075	108	ug/L
Zinc	50.0	53.71	107	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

**TechLaw, Inc. - ESAT Region 8  
Detection Limit (PQL) Standard  
ICPOE - PE Optima**

Metals (Total Recov) by EPA 200/7000 Series Methods

Sequence: 1011101

<u>Analyte</u>	<u>True</u>	<u>Found</u>	<u>%R</u>	<u>Units</u>
Aluminum	100	102.1	102	ug/L
Calcium	250	262.3	105	ug/L
Iron	100	108.1	108	ug/L
Magnesium	1000	1079	108	ug/L
Manganese	10.0	10.18	102	ug/L
Potassium	1000	1094	109	ug/L
Sodium	1000	1079	108	ug/L
Zinc	50.0	51.72	103	ug/L

Recovery Control Limits: 70-130% except Pb, Tl, Sb, & Hg at 50-150%. No limits for Al, Ca, Fe, K, Mg & Na.

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #: DG-216

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.8

Total Recoverable

Sequence ID#: 1011097

Instrument ID #: ICPMS-PE DRC-II

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011097-ICV1	Initial Cal Check	11/18/10	10:44
1011097-ICB1	Initial Cal Blank	11/18/10	10:47
1011097-CRL1	Instrument RL Check	11/18/10	10:50
1011097-IFA1	Interference Check A	11/18/10	10:53
1011097-IFB1	Interference Check B	11/18/10	10:56
1011097-CCV1	Calibration Check	11/18/10	10:59
1011097-CCB1	Calibration Blank	11/18/10	11:02
1011092-BLK2	Blank	11/18/10	11:05
C101101-14	CC17	11/18/10	11:08
1011092-DUP2	Duplicate	11/18/10	11:11
1011097-SRD1	Serial Dilution	11/18/10	11:13
1011092-SRM2	Reference	11/18/10	11:16
1011092-MS2	Matrix Spike	11/18/10	11:19
1011092-MSD2	Matrix Spike Dup	11/18/10	11:22
C101101-01	A68	11/18/10	11:25
1011092-PS2	Post Spike	11/18/10	11:27
1011097-CCV2	Calibration Check	11/18/10	11:33
1011097-CCB2	Calibration Blank	11/18/10	11:36
C101101-02	A72	11/18/10	11:39
C101101-03	CC01F	11/18/10	11:42
C101101-04	CC01S	11/18/10	11:45
C101101-05	CC01T	11/18/10	11:48
C101101-06	CC02A	11/18/10	11:50
C101101-08	CC02D	11/18/10	11:53
C101101-10	CC03C	11/18/10	11:56
C101101-11	CC03D	11/18/10	11:59
C101101-13	CC06	11/18/10	12:02
1011097-CCV3	Calibration Check	11/18/10	12:07
1011097-CCB3	Calibration Blank	11/18/10	12:10
C101101-15	CC17 DUP	11/18/10	12:13
C101101-16	CC18	11/18/10	12:16
C101101-18	CC19	11/18/10	12:19
C101101-20	CC48 DUP	11/18/10	12:22
C101101-21	CCOPP-12	11/18/10	12:24
C101101-22	M34	11/18/10	12:27
C101101-23	UASW001	11/18/10	12:30
1011097-CCV4	Calibration Check	11/18/10	12:36
1011097-CCB4	Calibration Blank	11/18/10	12:39

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.7

Total Recoverable

Sequence ID#: 1011098

Instrument ID #: ICPOE - PE Optima

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011098-ICV1	Initial Cal Check	11/18/10	09:32
1011098-ICB1	Initial Cal Blank	11/18/10	09:35
1011098-CRL1	Instrument RL Check	11/18/10	09:39
1011098-IFA1	Interference Check A	11/18/10	09:41
1011098-IFB1	Interference Check B	11/18/10	09:45
1011098-CCV1	Calibration Check	11/18/10	09:49
1011098-CCB1	Calibration Blank	11/18/10	09:52
1011092-BLK1	Blank	11/18/10	09:55
1011092-SRM1	Reference	11/18/10	09:58
C101101-14	CC17	11/18/10	10:02
1011092-DUP1	Duplicate	11/18/10	10:05
1011098-SRD1	Serial Dilution	11/18/10	10:08
1011092-MS1	Matrix Spike	11/18/10	10:11
1011092-MSD1	Matrix Spike Dup	11/18/10	10:14
1011092-PS1	Post Spike	11/18/10	10:18
C101101-01	A68	11/18/10	10:21
1011098-CCV2	Calibration Check	11/18/10	10:27
1011098-CCB2	Calibration Blank	11/18/10	10:30
C101101-02	A72	11/18/10	10:33
C101101-03	CC01F	11/18/10	10:36
C101101-04	CC01S	11/18/10	10:39
C101101-05	CC01T	11/18/10	10:42
C101101-06	CC02A	11/18/10	10:45
C101101-08	CC02D	11/18/10	10:48
C101101-10	CC03C	11/18/10	10:52
C101101-11	CC03D	11/18/10	10:55
C101101-13	CC06	11/18/10	10:59
1011098-CCV3	Calibration Check	11/18/10	11:06
1011098-CCB3	Calibration Blank	11/18/10	11:09
C101101-15	CC17 DUP	11/18/10	11:13
C101101-16	CC18	11/18/10	11:15
C101101-18	CC19	11/18/10	11:19
C101101-20	CC48 DUP	11/18/10	11:23
C101101-21	CCOPP-12	11/18/10	11:26
C101101-22	M34	11/18/10	11:29
C101101-23	UASW001	11/18/10	11:33
1011098-CCV4	Calibration Check	11/18/10	11:39
1011098-CCB4	Calibration Blank	11/18/10	11:42

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.7

Total Recoverable

Sequence ID#: 1011101

Instrument ID #: ICPOE - PE Optima

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011101-ICV1	Initial Cal Check	11/22/10	08:35
1011101-ICB1	Initial Cal Blank	11/22/10	08:38
1011101-CRL1	Instrument RL Check	11/22/10	08:41
1011101-IFA1	Interference Check A	11/22/10	08:43
1011101-IFB1	Interference Check B	11/22/10	08:47
1011101-CCV1	Calibration Check	11/22/10	08:51
1011101-CCB1	Calibration Blank	11/22/10	08:54
1011093-BLK1	Blank	11/22/10	08:57
1011093-SRM1	Reference	11/22/10	09:00
C101101-19	CC48	11/22/10	09:04
1011093-DUP1	Duplicate	11/22/10	09:07
1011101-SRD1	Serial Dilution	11/22/10	09:10
1011093-MS1	Matrix Spike	11/22/10	09:13
1011093-MSD1	Matrix Spike Dup	11/22/10	09:16
1011093-PS1	Post Spike	11/22/10	09:20
C101101-24	UASW002	11/22/10	09:23
1011101-CCV2	Calibration Check	11/22/10	09:29
1011101-CCB2	Calibration Blank	11/22/10	09:32
C101101-25	UASW004	11/22/10	09:35
C101101-26	UASW006	11/22/10	09:39
C101101-27	UASW008	11/22/10	09:43
C101101-28	UASW009	11/22/10	09:47
C101101-29	UASW010	11/22/10	09:50
C101101-30	UASW011	11/22/10	09:54
C101101-31	UASW012	11/22/10	09:58
C101101-32	UASW013	11/22/10	10:01
C101101-33	UASW014	11/22/10	10:05
1011101-CCV3	Calibration Check	11/22/10	10:13
1011101-CCB3	Calibration Blank	11/22/10	10:16
C101101-34	UASW017	11/22/10	10:19
C101101-35	UASW018	11/22/10	10:22
C101101-37	UASW019 DUP	11/22/10	10:25
C101101-38	UASW020	11/22/10	10:28
C101101-39	UASW021	11/22/10	10:31
C101101-40	UASW032	11/22/10	10:34
C101101-41	UASW034	11/22/10	10:37
1011094-BLK1	Blank	11/22/10	10:40
1011094-SRM1	Reference	11/22/10	10:44
1011101-CCV4	Calibration Check	11/22/10	10:50
1011101-CCB4	Calibration Blank	11/22/10	10:53
C101101-36	UASW019	11/22/10	10:56
1011094-DUP1	Duplicate	11/22/10	10:59

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #:

DG-216

## TechLaw Inc., ESAT Region 8

## INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.7

Total Recoverable

Sequence ID#: 1011101

Instrument ID #: ICPOE - PE Optima

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011094-MS1	Matrix Spike	11/22/10	11:05
1011094-MSD1	Matrix Spike Dup	11/22/10	11:09
1011094-PS1	Post Spike	11/22/10	11:12
C101101-42	UASW036	11/22/10	11:15
C101101-43	UASW037	11/22/10	11:19
C101101-44	UASW039	11/22/10	11:22
1011101-CCV5	Calibration Check	11/22/10	11:28
1011101-CCB5	Calibration Blank	11/22/10	11:31
C101101-45	UASW040	11/22/10	11:34
C101101-46	UASW041	11/22/10	11:37
C101101-47	UASW042	11/22/10	11:40
C101101-48	UASW043	11/22/10	11:43
C101101-49	UASW044	11/22/10	11:48
C101101-50	UASW045	11/22/10	11:51
C101101-51	UASW046	11/22/10	11:54
C101101-52	UASW047	11/22/10	11:57
C101101-53	UASW049	11/22/10	12:00
1011101-CCV6	Calibration Check	11/22/10	12:07
1011101-CCB6	Calibration Blank	11/22/10	12:10
C101101-54	UASW050	11/22/10	12:13
C101101-55	UASW054	11/22/10	12:16
C101101-56	UASW056	11/22/10	12:19
C101101-57	UASW058	11/22/10	12:22
C101101-58	UASW059	11/22/10	12:25
1011101-SRD2	Serial Dilution	11/22/10	12:31
1011101-CCV7	Calibration Check	11/22/10	12:34
1011101-CCB7	Calibration Blank	11/22/10	12:37

**TechLaw Inc., ESAT Region 8****INSTRUMENT ANALYSIS SEQUENCE LOG**

Analytical Method: 200.8

Total Recoverable

Sequence ID#: 1011102

Instrument ID #: ICPMS-PE DRC-II

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011102-ICV1	Initial Cal Check	11/22/10	09:08
1011102-ICB1	Initial Cal Blank	11/22/10	09:11
1011102-CRL1	Instrument RL Check	11/22/10	09:14
1011102-IFA1	Interference Check A	11/22/10	09:17
1011102-IFB1	Interference Check B	11/22/10	09:20
1011102-CCV1	Calibration Check	11/22/10	09:23
1011102-CCB1	Calibration Blank	11/22/10	09:26
1011093-BLK2	Blank	11/22/10	09:29
C101101-19	CC48	11/22/10	09:32
1011093-DUP2	Duplicate	11/22/10	09:35
1011102-SRD1	Serial Dilution	11/22/10	09:37
1011093-SRM2	Reference	11/22/10	09:40
1011093-MS2	Matrix Spike	11/22/10	09:43
1011093-MSD2	Matrix Spike Dup	11/22/10	09:46
1011093-PS2	Post Spike	11/22/10	09:49
C101101-24	UASW002	11/22/10	09:51
1011102-CCV2	Calibration Check	11/22/10	09:57
1011102-CCB2	Calibration Blank	11/22/10	10:00
C101101-25	UASW004	11/22/10	10:03
C101101-26	UASW006	11/22/10	10:06
C101101-27	UASW008	11/22/10	10:09
C101101-28	UASW009	11/22/10	10:11
C101101-29	UASW010	11/22/10	10:14
C101101-30	UASW011	11/22/10	10:17
C101101-31	UASW012	11/22/10	10:20
C101101-32	UASW013	11/22/10	10:23
C101101-33	UASW014	11/22/10	10:25
1011102-CCV3	Calibration Check	11/22/10	10:37
1011102-CCB3	Calibration Blank	11/22/10	10:40
C101101-34	UASW017	11/22/10	10:43
C101101-35	UASW018	11/22/10	10:46
C101101-37	UASW019 DUP	11/22/10	10:49
C101101-38	UASW020	11/22/10	10:52
C101101-39	UASW021	11/22/10	10:55
C101101-40	UASW032	11/22/10	10:57
C101101-41	UASW034	11/22/10	11:00
1011094-BLK2	Blank	11/22/10	11:03
C101101-36	UASW019	11/22/10	11:06
1011102-CCV4	Calibration Check	11/22/10	11:17
1011102-CCB4	Calibration Blank	11/22/10	11:21
1011094-DUP2	Duplicate	11/22/10	11:24
1011102-SRD2	Serial Dilution	11/22/10	11:43

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #: DG-216

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.8

Total Recoverable

Sequence ID#: 1011102

Instrument ID #: ICPMS-PE DRC-II

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011094-SRM2	Reference	11/22/10	11:46
1011094-MS2	Matrix Spike	11/22/10	11:49
1011094-MSD2	Matrix Spike Dup	11/22/10	11:51
1011094-PS2	Post Spike	11/22/10	11:54
C101101-42	UASW036	11/22/10	11:57
C101101-43	UASW037	11/22/10	12:00
C101101-44	UASW039	11/22/10	12:03
1011102-CCV5	Calibration Check	11/22/10	12:14
1011102-CCB5	Calibration Blank	11/22/10	12:17
C101101-45	UASW040	11/22/10	12:20
C101101-46	UASW041	11/22/10	12:23
C101101-47	UASW042	11/22/10	12:26
C101101-48	UASW043	11/22/10	12:29
C101101-49	UASW044	11/22/10	12:32
C101101-50	UASW045	11/22/10	12:35
C101101-51	UASW046	11/22/10	12:37
C101101-52	UASW047	11/22/10	12:40
C101101-53	UASW049	11/22/10	12:43
1011102-CCV6	Calibration Check	11/22/10	12:56
1011102-CCB6	Calibration Blank	11/22/10	12:59
C101101-54	UASW050	11/22/10	13:02
C101101-55	UASW054	11/22/10	13:05
C101101-56	UASW056	11/22/10	13:07
C101101-57	UASW058	11/22/10	13:10
C101101-58	UASW059	11/22/10	13:13
1011102-CCV7	Calibration Check	11/22/10	13:19
1011102-CCB7	Calibration Blank	11/22/10	13:22

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #:

DG-216

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.7

Dissolved

Sequence ID#: 1011107

Instrument ID #: ICPOE - PE Optima

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011107-ICV1	Initial Cal Check	11/23/10	10:14
1011107-ICB1	Initial Cal Blank	11/23/10	10:17
1011107-CRL1	Instrument RL Check	11/23/10	10:20
1011107-IFA1	Interference Check A	11/23/10	10:23
1011107-IFB1	Interference Check B	11/23/10	10:26
1011107-CCV1	Calibration Check	11/23/10	10:30
1011107-CCB1	Calibration Blank	11/23/10	10:33
1011103-BLK1	Blank	11/23/10	10:37
1011103-BS1		11/23/10	10:40
C101101-07	CC02D	11/23/10	10:42
1011103-DUP1	Duplicate	11/23/10	10:46
1011107-SRD1	Serial Dilution	11/23/10	10:50
1011103-MS1	Matrix Spike	11/23/10	10:53
1011103-MSD1	Matrix Spike Dup	11/23/10	10:57
C101101-09	CC03C	11/23/10	11:01
C101101-12	CC06	11/23/10	11:04
C101101-17	CC19	11/23/10	11:08
1011107-CCV2	Calibration Check	11/23/10	11:12
1011107-CCB2	Calibration Blank	11/23/10	11:15

Project Name: Upper Animas - Water - Oct 2010

Certificate of Analysis

TDF #:

DG-216

TechLaw Inc., ESAT Region 8

INSTRUMENT ANALYSIS SEQUENCE LOG

Analytical Method: 200.8

Dissolved

Sequence ID#: 1011108

Instrument ID #: ICPMS-PE DRC-II

Water

LSR #: DG-216

Analysis ID	Sample Name	Analysis Date	Analysis Time
1011108-ICV1	Initial Cal Check	11/23/10	10:58
1011108-ICB1	Initial Cal Blank	11/23/10	11:01
1011108-CRL1	Instrument RL Check	11/23/10	11:04
1011108-IFA1	Interference Check A	11/23/10	11:07
1011108-IFB1	Interference Check B	11/23/10	11:10
1011108-CCV1	Calibration Check	11/23/10	11:13
1011108-CCB1	Calibration Blank	11/23/10	11:16
1011104-BLK1	Blank	11/23/10	11:19
1011104-BS1		11/23/10	11:22
C101101-07	CC02D	11/23/10	11:25
1011104-DUP1	Duplicate	11/23/10	11:28
1011108-SRD1	Serial Dilution	11/23/10	11:30
1011104-MS1	Matrix Spike	11/23/10	11:33
1011104-MSD1	Matrix Spike Dup	11/23/10	11:36
C101101-09	CC03C	11/23/10	11:39
C101101-12	CC06	11/23/10	11:42
1011108-CCV2	Calibration Check	11/23/10	11:47
1011108-CCB2	Calibration Blank	11/23/10	11:50
C101101-17	CC19	11/23/10	11:53
1011108-CCV3	Calibration Check	11/23/10	11:59
1011108-CCB3	Calibration Blank	11/23/10	12:02

**Project Name:** Upper Animas - Water - Oct 2010

**TDF #:** DG-216

**Certificate of Analysis**

**APPENDIX C**

**Project Field Logbook**

"**O**r **w****o****r****k** **p****ro****g****ra****m**...  
...for outdoor writing people."



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Upper Animas  
Mining District  
TDD No 10D8-13

<sup>2</sup>  
Dudevoir

9/1/10

M. Dudevoir spoke w/ Sabrina  
Forrest (EPA SAM)

- would like 2 START personnel to accompany Bill Schroeder on sampling event for recon in Cement Creek / Animas River
- START people A. Longworth J. Gilbert or J. Christner
- other sites to check out
  - Mayflower tailings piles: leaking red into Animas - staining on banks
  - Kendrick Gelder smelter
  - Kitty Mack waste piles

- START can sign on EPA HASP for sampling/ recon event - will make own HASP for actual sampling
- goal is not to do a watershed listing  $\Rightarrow$  focus on listing individual mine sites

M. Dudevoir

9/1/10

<sup>3</sup>  
M. Dudevoir

9/3/10

M. Dudevoir + A. Longworth mob to Silverton

9/14/10

M. Dudevoir + A. Longworth accompany B. Schroeder on EPA water sampling event  $\rightarrow$  activities logged in EPA logbook

9/15/10

same activities as previous day. Completed sampling.

~~9/15/10~~

MGL

4

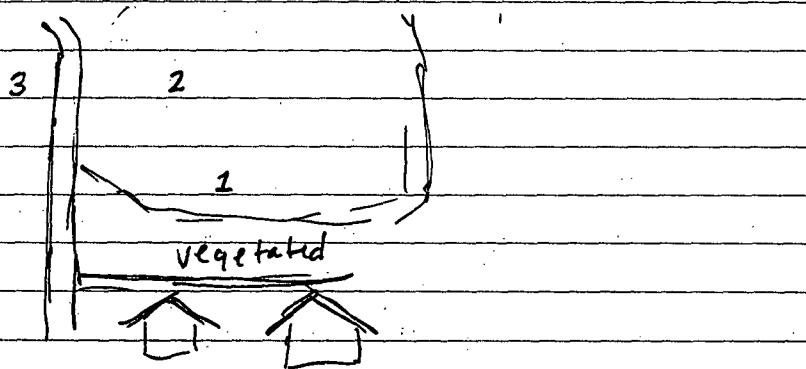
## Dudevoir

9/16/10

09:00 Met w/ Lisa Richardson (CRM)  
to see Kendrick Gelder Smelter  
Waste, Kitty Mack + Mayflower  
Sunnyside tailings

Kendrick-Gelder is on N side  
of town. Large smelter waste  
pile (photos 100-0001 through  
100-0007)

used BLM XRF to collect in situ  
data:



Smelter EPA.1 Pb 112 Co 158

As 21 Fe

Zn 83 Mn 774

Cu 114

Smelter EPA.2 Pb 97 Cu 96

As ND Co -

Zn 70 Mn -

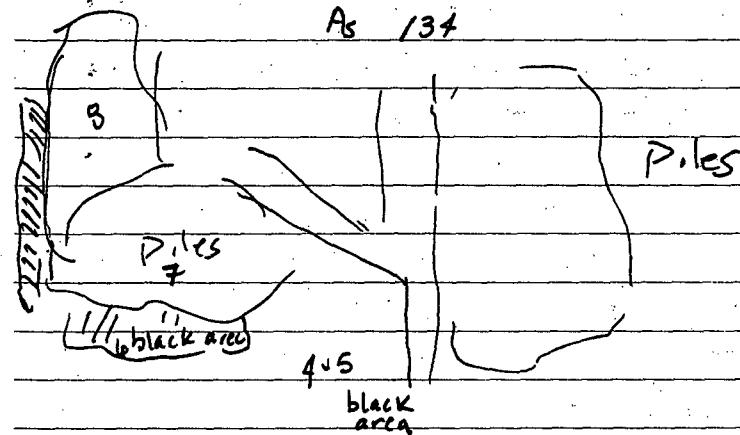
5

## Dudevoir

9/16/10

smelter EPA.3 Pb 2279

As 134



smelter EPA.4 Pb 1327 Cu 1928

As 112 Co 1408

Zn 12.1 K

smelter EPA.5 Pb 1092 Cu 2330

As 127 Co 1203

Zn 10K

smelter EPA.6 Pb 1144 Cu 1964

As - Co 1094

Zn 11.5K Mn 2804

smelter EPA.7 Pb 97 Cu 142

As 17 Co 392

Zn 114 Mn

smelter EPA.8 Pb 56

As 12

Zn 89

6

## Dudevoir

9/16/10

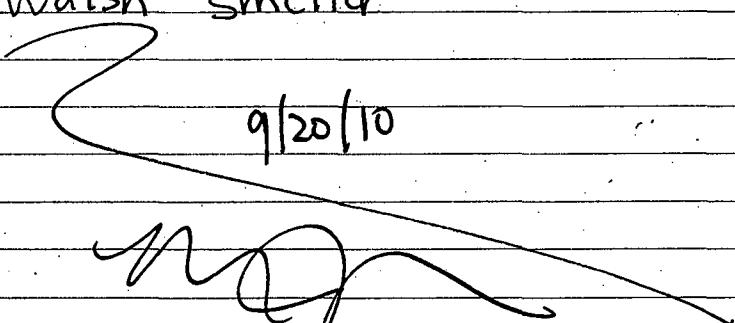
construction project is ongoing at smelter site. Unclear where smelter waste piles are / were. Observed black spots in low areas w/ high readings for Zn + what appeared to be similar material + smelter waste mingled w/ fill piles.

Foreman said they put 2" of onsite fill + 4" topsoil over site → residential development

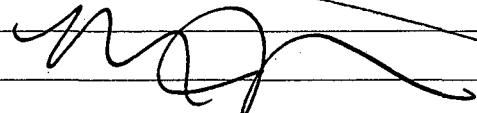
\* Marcy Bidwell - local

\* Terry - foreman

Post entry 9/20/10 - After site visit determined we were at the wrong location + the above described site is the Rose-Walsh smelter



9/20/10



MD

## Dudevoir

9/16/10<sup>7</sup>

Sunnyside - Impoundment constructed by Sunnyside - Larry Peris (foreman) 1992 - 1998ish construction. Maybe constructed from wet material from mostly material from Gladstone waste ponds. (photos 100-0008-100-0012)

Water is seeping from piles under the road and entering river. Extensive brown staining

pH = 5.83

Cond = 436  $\mu\text{s}/\text{cm}$

Temp = 9.2

Observed some red/brown sediment + slower water

pH 5.2

cond 1472  $\mu\text{s}/\text{cm}$

temp 11.3°C

water in sediment

pH 4.63

cond 1400  $\mu\text{s}/\text{cm}$

temp 16.5

8

## Dudevoir

9/16/10

water in Animas on opposite side  
of bank

pH: 6.9

cond: 295  $\mu\text{s}/\text{cm}$

temp: 7.2°C

Judy Zimmerman

County Assessor has Sunnyside  
maps + aerial photos.

Tailings piles are pretty flat on  
top. All have drainage ditches  
behind them. Evidence of standing  
water on top of piles

Bill Simon - head of Animas

Stakeholders has done work  
here.

Below Mayflower Mill - dead area  
Some red fines, lots of dead  
aspen trees. → off County Road 2

XRF of red fine material by  
the road Pb 1239 Zn 298

As 740 Cu 171

## Dudevoir

9  
9/16/10

Kitty Mack:

owner Jack Clark (part) owns  
+ has not historically been  
friendly w/ EPA or BLM other  
owner Joe + Cheryl Jebsen (?)  
387-5400 - home phone

Large area of white waste w/  
evidence of ATV/ dirt biking on  
the piles. Few inches under the  
white sand is red/brown fine  
material.

Homeowner (Cheryl J.) agreed  
to XRF in situ shots. Seemed  
agreeable to sampling + mentioned  
they would like to see material  
cleaned up

XRF in red material (~1" deep)

Pb 5111 Zn 231

As 152 Cu 617

XRF in white material (surface)

Pb 8403 Zn 869

As 1003 Cu 2368

Wet area by old RR grade that  
drains eventually to Animas.

10

## Dudevoir

9/16/10

XRF in drainage area

Pb	NP <sup>(no)</sup> 361	Zn	4/53	Mn	70
As	1/53	Cu	1279	Co	140

XRF by RR grade

Pb	27.7K	Zn	18.4K	Mn	36K
As		Cu	2763		

Property has beaver pond. Obs.  
fish in pond

XRF by pond

Pb	7226	Zn	1707	Mn	2552
As	81	Cu	1604		

homeowner said in summer  
people fish in the area. Homeowner  
is on well water ~80' w/ no  
treatment

\* between RR + Animas  
XRF in open area on W side (white color)

Pb	14.2K	Zn	24.7K	Mn	75.6K
As	243	Cu	2859		

XRF - same spot - dark grey color

Pb	11.8K	Zn	10.6K	Mn	42.7K
As	-	Cu	1131	Fe	15K

XRF adjacent to Animas

Pb	2883	Zn	914	Mn	21.7K
As	-	Cu	341		

Photo 100-0028 back to Animas  
facing property

11

## Dudevoir

9/16/10

XRF in Animas fines

Pb	235	Zn	702	Mn	2802
As	54	Cu	90		

XRF in red sediment on Animas banks

Pb	3021	Zn	2544	Mn	5102
As	-	Cu	127		

Same location - more grey color

Pb	3676	Zn	2562	Mn	19.1K
As	141	Cu	325		

Pile of waste rock adjacent to  
road + cement creek - observed  
staining on wall and erosion on  
pile (photo 100-0031). Collected  
GPS.

Waste rock in wooden / containment -  
on cement creek + road. Flow  
coming down the side. Opposite  
side of road → stained wetland  
area

adjacent to cribbing  
temp - 15.00

pH - 6.77

cond - 1292

Dudevoir

Mo  
9/10/10

Meeting w/ S. Forrest / A. Longworth

- Sampling to be pushed back because Sabrina will meet w/ Stakeholders 10/18 + wants their buy in to FSP
- week of 1 Nov Sabrina will be there w/ Bill Schroder
- Kitty Mack - pull out as separate PAISI
- Kendrick Gelder will be pulled out as separate PAISI  
Probably - may be owned by town. Sabrina will check on ownership / access
- Discussed listing will have to be based on wetlands unless we can prove animals below C.C. is 3x above C.C. above C.C.
- GW wells are available - can't list based on GW bc no background sample available
- fishing observed b/t Arastra Gulch + Cunningham → upstream of C.C. in animals

Dudevoir

9/10/10

- Anglo Saxon Mine - 319

reclamation by private owner (maybe?)

- also should investigate area around Co goldfields building ↳ kill zone around quonset hut : possibility that some tailings were not removed

- watch out for area between Red + Bonita + Cement Creek ⇒ MSI has vegetation plots

- START will talk w/ Bryan Williams about sample plan → Sabrina would like to list/<sup>score</sup> fisheries too, not just wetlands.

- we think that means bracketing each gulch going upstream

- START will get prelim. plan together + call Sabrina on 9/7/10

Dudevoir

9/7/10

START determined listing on fisheries will require approx 2 x # of samples → bracketing gulches on lower Cement Creek. Only can list fisheries based on 3x background score in Animas. Proposed to Sabrina → do ER SAP to determine if fisheries sampling is required (do 3 samps on 10/8/10 - 10/9/10) Sabrina approved "ER" sampling to avoid unnecessary Cement Creek sampling if possible. Will send samps to ESAT + get ER SAP to Sabrina.

Mug R

AT 10/7/10

Longworth

Friday. 10/8/10

0630 A Longworth departs Denver for Silverton.

1300 A Longworth arrives in Silverton and tries to find appropriate locations for sampling upper Animas and Cement Creek. Cement Creek appears to be entering the Animas and running along the bank, sample of the Animas will be taken from the center of the channel just before it begins to braid.

1430 Collect sample VASW001-08102010 ad VASW001D-08102010. Multimeter #3 used, calibrated for pH(3 point) and conductivity. Temp = 10.2 °C

pH = 4.96

Cond = 617 µS/cm

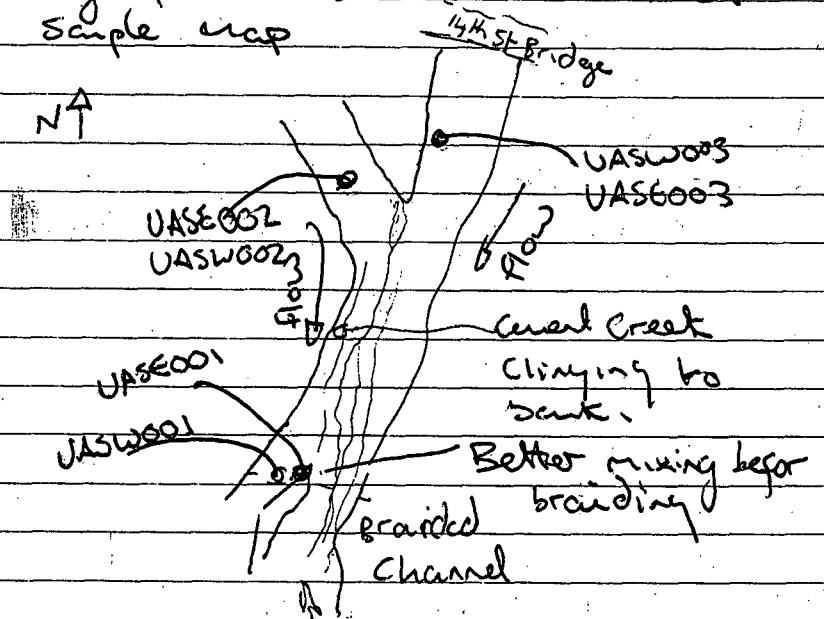
Water samples filtered using 0.45 micron Geotech filter. VASW001-08102010 1x1 L poly container, VASW001D-08102010 3x1 L poly containers 1 for sample 2 for MS/MSD analysis. Samples preserved with HET before cooling to 4°C

16

## Longwork

1435 Collect samples UASE001-081010  
 and UASE001D-08102010 from  
 north side of island, below tree  
 and between rocks. UASE001-08102010  
 $= 1 \times 250\text{ mL}$  poly UASE001D-08102010  
 $= 3 \times 250\text{ mL}$  poly (1=sample, 2= $\mu\text{s}/\text{mL}$ )  
 GPS of both locations taken, photo-  
 graphs also taken. GPS = #3.

Sample map



1530 UASW002-08102010 taken  
 from Cement Creek before  
 confluence with the Upper  
 Animas. Sample collected

10/08/10  
08/08/10

1620

## Longwork

as before.

TEMP Temp =  $12^\circ\text{C}$ 

pH = 7.2

Cond =  $1010 \mu\text{s}/\text{cm}$ 

1x1L poly preserved w/ Hg

1535 Collect sample UASE002-08102010  
 from Cement Creek, co located with  
 UASE002-08102010.  $1 \times 250\text{ mL}$ .  
 poly container collected with  
 disposable scoop.

1600 Collect sample UASW003-08102010  
 from Upper Animas downstream  
 of USGS station at 14<sup>th</sup> Street.  
 Temp =  $10.5^\circ\text{C}$

pH = 7.91

Cond =  $295 \mu\text{s}/\text{cm}$ 

1605 Collect sample UASE003-08102010  
 $1 \times 250\text{ mL}$  poly.

GPS and photos taken at all  
 locations

1630 end of day on site.

17

10/08/10

as before.

TEMP Temp =  $12^\circ\text{C}$ 

pH = 7.2

Cond =  $1010 \mu\text{s}/\text{cm}$ 

1x1L poly preserved w/ Hg

10/25/10

07:30 Left DC for Silverton  
04:00 Arrived in Silverton -  
spoke w/ Bill Simon  
arranged to use  
miners hospital for  
sample management

17:00 Calibrated pH meter  
17:05 Collected UASE029 +  
UASW029

pH: 7.25

temp: 5.4 °C

cond: 634 μS

photo: 100-1680

17:30 Collected UASW033 +  
UASE033 (Mineral  
Creek)

pH: 7.51

temp: 1.0 °C

cond: 390 μS

photo: 100-1682 1681

18:00 packed samples in cooler  
+ secured in hotel room

Put GPS + pump batteries on  
charge

10/25/10

MD

10/26/10

M. Duvelo,

08:00 Attempted to locate spot for  
sampling on Mineral Creek  
below water treatment plant  
could not get above Animas +  
below outfall → keep original  
033 as sample

08:30 collected UASW032 and  
UASE032 (Animas  
downstream  
of Mineral  
Creek)  
temp - less than Ø  
pH 6.35 photo 100-1682  
cond 521 μS

09:50 collected UASW034 / CLASE034  
at Animas upstream of Mineral  
Creek

temp: less than Ø

pH: 6.65

cond: 0.59 μS

photo 100-1683

09:37 Collected UASW035 <sup>001</sup> and  
UASE035 <sup>001</sup> → Animas  
downstream of Cement Creek

temp: below Ø °C

pH: 3.88

cond: 1139 μS

photo: 100-1684

20

10/26/10

M. Duckevoir

09:45 Collected UASW002 +  
UASE002

at Cement Creek upstream of  
Animas

temp: below  $\varnothing$

pH: 3.60

cond: 970  $\mu\text{s}$

• photo 100-1605

10:15 Collected UASW003 + UASE003

on Animas River upstream of  
Cement Creek

temp: below  $\varnothing$

pH: 7.61

cond: 3660  $\mu\text{s}$

• photo: 100-1686

10:35 Collected UASW035 + UASE035

downstream of Kendrick Smelter

temp: below  $\varnothing$   $1.1^\circ\text{C}$

pH: 3.83

cond: 1106  $\mu\text{s}$

• photo: 100-1687

collected duplicate + MS/MSD at  
this location

Dup is UASW097 - UASE097

21

10/26/10

M. Duckevoir

11:15 Collected UASW036 + UASE036

on Cement Creek above  
Kendrick Smelter

temp  $1.8^\circ\text{C}$

pH 4.16

cond 1162  $\mu\text{s}$

• photo 100-1688

11:50 Collected UASW037 + UASE037 on

Cement Creek below Illinois Gulch

temp  $3.6^\circ\text{C}$

cond 1109

pH 4.20

• photo 100-1689

Did not collect UASW038/UASE038

because confluence of

Illinois Gulch + Cement Creek

appeared to be on private  
property w/ a no trespassing  
sign

12:15 Collected UASW039 +

UASE039 → upstream of

Illinois Gulch / downstream of

Ohio Gulch

temp  $3.0^\circ\text{C}$

pH 3.80

cond 1155  $\mu\text{s}$

• photo 100-1690

10/26 110

M. Dudevoir

E040

12:20 Collected UASW040 + UASE040  
discharge of Ohio Gulch

temp: less than 0°C

pH: 2.94

cond: 1139

• photo: 100-1691

12:30 Collected UASW041 + UASE041  
on Cement Creek upstream of  
Ohio Gulch outfall

temp: 3.6

cond: 1170

pH: 3.70

• photo: 100-1692

13:00 - 13:50 lunch break

13:50 Collected UASW042 + UASE042  
downstream of Anglo Saxon  
Mine on Cement

temp: 5.6

pH: 3.86

cond: 1161

• photo: 100-1693

also downstream  
of Minnesota Gulch

14:00 Collected UASW044 + UASE044  
upstream of Anglo Saxon  
Mine of Cement Creek

temp: 5.6°C

cond: 1145

• photo: 100-1694

pH: 4.00

10/26 110

M. Dudevoir

14:15 Collected UASW048 + UASE048  
at Anglo saxon discharge-adjacent  
to cribbings

temp: 9.0°C

cond: 1559

pH: 6.95

• photo: 100-1695

14:30 Collected UASW045 + UASE045 in  
Minnesota Gulch - upstream of  
culvert under road

temp: 1.2°C cond: 503-S

pH 4.41 • photo 100-1696

14:40 Collected UASW046 + UASE046  
Cement Creek upstream of  
Minnesota Gulch

temp: 5.7°C cond: 1158

pH: 3.82 • photo: 100-1697

Did not collect UASW048/UASE048  
→ could not identify flow from  
ETK tunnel.

15:05 Collected UASW047 + UASE047  
downstream of ETK Tunnel +  
Fairview Gulch on Cement Creek

temp: 5.7°C

pH: 3.80

cond: 1152

• photo: 100-1698

24

8/10/26/10 M. Dudevori

Avalanche Mine Gulch → not flowing.

15:20 Collected UASW049, UASE049 downstream of Georgia Gulch, relocated closer to Georgia Gulch

temp: 5.0 °C cond: 1139

pH: 4.05 photo: 100-1699

15:40 Collected UASW050 + UASE050 upstream of Georgia Gulch on Cement Creek

temp: 4.7 °C cond: 1144

pH: 4.17 photo: 100-1700

16:40 Collected UASW053<sup>4</sup> + UASE053<sup>4</sup>

~~downstream of Prospect Gulch upstream of~~ Cement Creek in Prospect Gulch discharge

temp: 1.5 °C cond: 637

pH: 4.12 photo: 100-1701

UASW053, UASW055, UASE053 + UASE055 are all on

private property → no access, so did not sample

17:00 conducted Recon on sites for tomorrow

18:00 left site for the day

25

10/27/10 M. Anderson

08:30 Collected UASW056 + UASE056 on Cement Creek downstream of dry Gulch

temp 0.2 °C cond: 1186

pH 4.29 photo: 100-1702

Did not collect UASW057 + UASE057 because Dry Gulch was dry

09:45 Collected UASW058 + UASE058 on Cement Creek upstream of dry Gulch

temp 0.1 °C cond: 1215

pH 4.40 photo: 100-1703

09:00 Collected UASE004 + UASW007 on Cement Creek downstream of confluence w/ S. Fork C.C.

temp 0.00 cond: 1257

pH 4.81 photo: 100-1704

09:15 Collected UASE006 + UASW006 → Cement Creek upstream of S. Fork C.C.

temp <sup>(m)</sup> below 0 °C cond: 1619

pH <sup>(m)</sup> 3.93 photo: 100-1705

26

10/27/10

09:25 Collected UASW005 + UASE005  
collected duplicate UASW098 +  
UASE098, and MS/MSD at  
this location

temp 0.7°C cond 913 mS  
pH 6.93 photo 100-1704

10:00 Collected UASE007 + UASW007  
in American Tunnel discharge  
directly upstream of Cement Creek  
temp 6.1 cond 2.88 mS  
pH 5.73 photo 100-1707

10:05 Collected UASW001 at  
American Tunnel portal  
temp 7.1 cond 2.40 mS  
pH 4.48 photo 100-1708

collected sed and Isotope samples

10:15 Collected UASW008 + UASE008  
at Cement Creek upstream  
of American Tunnel  
temp below 0°C cond 1505 mS  
pH 4.30 photo 100-1709

M.Dudek

27

10/27/10

M.Dudek

10:45 Collected UASW009 + UASE009  
on Cement Creek downstream  
of N. Fork C.C.  
temp 0.5 cond 14.91

pH 4.32 photo 100-1710

10:55 Collected UASW013 + UASE013  
on Cement Creek upstream  
of N. Fork C.C.

temp 0.8°C cond 1269  
pH 5.76 photo 100-1711

11:10 Collected UASW010 + UASE010  
on N. Fork of CC  
temp 0.1°C cond 2.27 mS  
pH 3.42 photo 100-1712 + 1713

13:00 Attempted to sample  
locations near Red + Bonita +  
Gold King 7 Level. Vehicles  
could not make it. Returned  
to office at Miners Hospital  
to pack + label samples. Discussed  
concern about collecting  
sediment above N Fork due  
to frozen conditions

28

10/28/10

M. Dutevoir

08:30 Called Sabrina Forrest about sediment concern → not able to see creek enough to pick good sediment locations due to ice / snow. We will collect as much as we can but may not make it above R+B or Mogul. Today will hike to Gold King + Red + Bonita + get seds, water, soils. Will call SF tomorrow w/ progress report + plan  
 0945 C UASW014 and UASE014 below Rd and Bonita on Cement Crk.  
 temp 0.3°C pH 5.97  
 cond 1352 μS photo 100-1714

10:00 Collected UASW015 + UASE015 in channel below Red + Bonita  
 temp 2.0°C  
 pH 6.94  
 cond 2.16 mS  
 photo 100-1715

10:30 Collected AD003 at Red + Bonita

temp: 5.5°C cond: 2.20 mS

pH 3.2

photo 100-1716

M. Dutevoir

11:00 Collected UASW016 + UASE016 in Cement Creek upstream of Red + Bonita  
 temp 11R cond 3.98 mS  
 pH 5.35 photo 100-1717  
 sediment limited at this location

11:30 Recollected sediment at N Fork of Cement Creek to 100-1718 get more fines → UASE00

11:38 Recalibrated pH meter due to higher than expected readings for pH at Red + Bonita. Meter appeared to be reading in normal range. R+B runoff may be diluted by runoff.

Collected UAA002 At 3:40 Gold King 7 Level adit

temp 7.3°C cond 1304 mS  
 pH 4.31 photo 100-1719

4:10 Collected UASW011 + UASE011 at road crossing below 7 Level → could not get below lower piles due to steep slope + snow

10/28/10

M. Dandavoir

temp 7.7 °C

cond 1774 μS

pH 3.93

photo 100-1721

14:25 Collected UASW012 + UASF012  
 above Gold King → attempt  
 was made to get higher  
 but creek was frozen over  
 + no flow obs.

temp 1.8 °C cond 374 μS

pH 4.26 photo 100-1722

not enough sediment to  
 collect PCB jar at this location

16:30 Returned to office at  
 Miners hotel to manage  
 samples. Plan for tomorrow  
 + Saturday:

- hike to Grand Mogul
- hike to Mogul → samples,  
 isotope samples, transducer  
 maint.
- hike to 7 Level → isotope  
 samples, transducer,  
 modify transducer but
- Red + Bonita → isotope  
 transducer, waste rock
- American tunnel →  
 transducer / waste rock

10/28/10

M. Dandavoir

BW will return to  
 Denver + drop samples off  
 at ESAT - NW, MD + AC will  
 stay in Silverton to  
 complete remaining tasks

10/28/10

May 9 P.D.

10/29/10

0800 Calibrated pH meter

Called SF → updated on 10/28

progress + will sample mogul /

Grand mogul today

H + S meeting: Slips / trips in  
snow. Watch snow conditions  
for slides. Hydrate. Stay warm.

11:55 Collected UASW017 + UASE017

below Mogul wetland

temp 3.1°C cond 478 μS  
pH 5.12 photo 100-1723

12:50 Collected UASW019 + UASE019

at Mogul wetland

temp 4.1 cond 1225  
pH 3.32 photo 100-1724collected duplicate UASE099 +  
UASW099 at this location  
with MS/MSD

13:30 Collected UASW018 + UASE018

upstream of Mogul wetland

temp 3.4 cond 485 μS  
pH 4.23 photo 100-1725there is approx 1' snow + 1726  
on the ground + weather  
is sunny in the 40s (°F)

⇒ Snowmelt in creek flow

M. Didevoir

10/29/10

M. Didevoir

13:50 Collected UASW020 + UASE020

- upstream of Mogul Mine on  
Cement CreekpH 5.69 cond 284 μS  
temp 1.0 photo 100-1727Also collected isotope sample  
at this location→ 2 L poly w/no headspace  
2 40 oz JOA 3/4 fullCollected AD004 at Mogul  
Mine Adit (CC02D)temp 5.1 cond 717 μS  
pH 3.98 photo 100-1728Following sample collection  
batteries died in pH meter.Returned to town - could not  
find batteries in town + had  
to drive to Durango to get  
some ⇒ no more sampling  
for the day

10/29/10

Mogul

10/30/10 M-Dudevoir  
08:00 H+5 Muting - steps, trips/falls  
Careful driving on snowy roads,  
hydrate, stay warm

09:15 collected isotope sample  
at AD001 → American Tunnel  
09:30 Shot VRF around portal  
observed Pb ~ 200-600 ppm  
Cobalt ~ 400 ppm

Parameters @ American Tunnel  
temp 7.5 °C cond - 2.10 mS  
pH 5.26

10:00 Collected SD001 at American  
Tunnel - ground is very  
frozen - sample 0-0.5"

10:05 Collected SD002 at American  
Tunnel 0-1"

• photo 100-1729

On drive to Red + Bonita got  
a flat tire - drove down  
mountain to repair. Had to  
go to Durango for a new  
tire.

10/30/10

SPM SP2

10/31/10 M-Dudevoir  
08:30 at Red + Bonita -  
downloaded transducer + put  
on new dessicant.

09:15 Collected isotope sample at  
adit ↓ temp 5.7°C

09:15 Collected SD03 0-8" top pH 6.70  
• pile; photo 100-1725-31 cond 25.3 mS

09:30 Collected SD04 at 0-6" on  
middle level of pile; photo 100-1732

09:40 Collected SD05 at bottom level  
of pile @ 0-6" - photo 100-1733

11:10 Collected UASE021 + UASW021  
downstream of Mogul North  
Mine

temp 2.0 °C ...photo 100-1736  
pH 5.94

cond 337 μS (micro)

11:30 Collected UASE022 + UASW022 in  
Mogul North drainage  
temp 3.7 °C

pH 4.96 ...photo 100-1737  
cond 388 μS

11:40 Collected UAS006 at Mogul  
North waste pile @ 0-6"  
1 Sample required because pile is small  
photo: 100-1738, 1739, 1740, 1741

10/31/10

11:50 Collected UASE023 + UASW023 downstream of Queen Anne drainage on Cement Creek

temp 3.8°C

pH 5.71

cond 341 μS

photo 100-1742

12:05 Collected UASE024 + UASW024 in Queen Anne drainage  
temp 3.2

pH 5.40

photo 100-1743

Cond 412 μS

12:20 Collected UASO047 at Grand Mogul Stope west side  
0-6" photo 100-1744

12:25 Collected UASO008 at Grand Mogul Stope E side  
0-6" photo 100-1745

12:40 Collected UASW051 + UASE057  
Very little sediment - sed we could collect is clinging to moss. Not enough sed's for PCBs. Location is at toe of Grand Mogul

temp 1.5°C cond 780μS

pH 3.14 photo 100-1746

10/31/10

M. Dudevoir

Also collected isotope sample at this location

13:00 Collected UASW030 + UASE030 on Cement Creek upstream of Grand Mogul - also collected isotopes

temp 0.7°C cond 274 μS

pH 6.73 photo 100-1749

+ photo 1747 + 1748 → hike up to

sample location foreground

+ photo 1750 → Grand Mogul +  
Mogul stope piles

Very limited seds at SE030 - not enough for BCB

13:15 Collected UASO099 on E side  
of Grand Mogul Piles

0-6" photo 100-1757

13:20 Collected UASO010 <sup>(#)</sup> UASO010  
on Grand Mogul piles - middle  
0-6" photo 100-1758

13:25 Collected UASO011 on "Grand Mogul" piles W side 0-6" photo 100-1759

14:00 Collected UASO012 on off <sup>(#)</sup>  
Mogul Mine piles W side, 0-6"  
photo 100-1760

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10/31/10 M. Dudevoir  
 14:05 Collected UASO<sup>13</sup> on Mogul  
 Mine Piles → adjacent to shed  
 0-6" photo 100-1761  
 14:10 Collected UASO<sup>14</sup> on Mogul  
 Piles E side 0-6" photo 100-<sup>1762</sup><sub>1763</sub>  
 15:00 Tried to collect UASWDS1 +  
 UASEOS1 → Mammoth Tunnel.\*  
 Observed 2 ponds (treatment  
 cells). Could not locate an  
 outfall from the lower cell.  
 Cement Creek adjacent to  
 the tunnel appeared red  
 colored + observed black moss  
 + slime. Pond appears to be  
 infiltrating. Did not collect  
 sample because no sample  
 point could be identified.  
 Photos: 100-1764 + 100-1765  
 16:00 Could not reach sample locations  
 above Grand Mogul Mine due  
 to snow + potentially unsafe  
 conditions ⇒ 025, 026, 027, 028, 031  
 - did not collect 029 → no discharge  
 from G. Mogul Mine

\* Determined UASWDS2 + UASEOS2 are not  
 necessary w/r flow from Mammoth Tunnel

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11/1/10 M. Dudevoir  
 09:45 Collected UASW012 isotope  
 sample → upstream Gold King  
 temp 3.6  
 pH 4.74  
 cond 353 uS  
 10:05 Collected UAAD002 isotope  
 sample → Gold King adit  
 temp: 7.9°C  
 pH: 4.20  
 cond: 1610  
 Could not collect waste rock/  
 soil sample at Gold King. EPA  
 access agreement does not  
 include soils. The only public  
 area of waste pile is too  
 steep + loose to sample  
 photo 100-1766 + 100-1767  
 12:00 Hiked to vehicle, returned  
 to miners Hospital to pack  
 supplies. Added ice to coolers  
 + custody sealed for return  
 trip to denver  
 14:00 Departed from Silverton

11/1/10  
 M.D.

NO ENTRIES TO  
FOLLOW

11/11/10

Moamp

## **APPENDIX D**

### **Project Data Quality Objectives**

**UPPER ANIMAS MINING DISTRICT SITE REASSESSMENT**  
**Project Data Quality Objectives**

Step 1 Problem Statement	Step 2 Identifying the Decisions	Step 3 Decision Inputs	Step 4 Study Boundaries	Step 5 Decisions Rules	Step 6 Tolerance Limits on Errors	Step 7 Optimization of Sample Design
<p>The question to be resolved by this SR was whether any contamination from the sources of mine waste in upper Cement Creek have migrated into the environment where it is impacting environmental and/or human health targets. The sources from the upper Cement Creek mine sites may affect the surface water in Cement Creek and the Animas River. Mining-impacted surface water from Cement Creek sources may impact Cement Creek and Animas River wetlands. Impacts to water quality from Cement Creek sources may be impacting Animas River fisheries.</p> <p>Historic information about the upper Cement Creek mine sites suggests a concern for the likelihood of release of heavy metal contamination and the potential for release of PCBs into Cement Creek and the Animas River. The primary goal for this SR is to determine the presence and extent of surface water and sediment contamination and, if contamination is found, determine if it is attributable to the upper Cement Creek mine sites, and to what degree.</p> <p>The primary study questions answered for this investigation were:</p> <ul style="list-style-type: none"> <li>• Do Cement Creek mine waste piles and draining adits contain elevated concentrations of metals?</li> <li>• Are the nearby surface waters and associated sediment (i.e., Cement Creek and the Animas River) impacted by the sources?</li> <li>• Do sample concentrations exceed applicable benchmarks?</li> <li>• If elevated metals and PCBs are identified, are the elevated constituents attributable to Cement Creek sources?</li> </ul>	<p>There are two media at the upper Cement Creek drainage, surface water and sediment, which may contain contamination that may pose a risk to the environment or human health. The potential source locations include waste rock/tailings piles, the discharge from the adits of the upper Cement Creek mines, and surface water flow from the waste piles. Waste rock piles (soil) are another potential source, and while low population density exists in the area, the soil may be impacting wetlands. Samples will be analyzed for TAL metals. In addition to metals contamination, the potential exists for PCB contamination at the mines due to equipment use. Selected source and sediment samples will be analyzed for PCBs in addition to metals.</p> <p>The following data will be used to guide decision-making at the site:</p> <ul style="list-style-type: none"> <li>• Field data and documented observations from surface water, sediment, surface soil (source), and mine drainage (aqueous source) sampling;</li> <li>• Analytical data from surface water, sediment, surface soil (source), and mine drainage (aqueous source) samples to determine if contaminants from the upper Cement Creek mine sites have migrated;</li> <li>• Identification and documentation of environmental and human health targets potentially impacted by migration of contaminants from the upper Cement Creek mine sites into surface water and sediment; and</li> <li>• Comparison of analytical results to Maximum Contaminant Levels (MCLs), EPA Regional Screening Levels (RSLs), applicable Superfund Chemical Data Matrix (SCDM) benchmarks, and background levels.</li> </ul>	<p>The pathway of concern at the Upper Animas Mining District site is the Surface Water Pathway in Cement Creek and the Animas River. The soil pathway may be a concern, but is not considered to have high exposure due to low population density.</p> <p>Potential human health and environmental targets of the Upper Animas Mining District site include the wetlands and fisheries downstream of the upper Cement Creek Mine sites.</p> <p>Samples that were collected and analyzed include surface water and sediment from Cement Creek, the Animas River, and Mineral Creek. In addition, samples were collected from the adits of the Gold King 7 Level Mine, the American Tunnel, Red and Bonita Mine, Mogul Mine, Grand Mogul Mine, and the American Tunnel. Soil (source) samples were collected from the Red and Bonita Mine, Mogul Mine, North Mogul Mine, Mogul Stope Complex, and Grand Mogul Mine.</p> <p>Field activities were conducted between October 25, 2010 and November 2, 2010.</p>	<p>The potential receptors at the Upper Animas Mining District site include aquatic habitats and wetlands.</p> <p>Analytical results for surface water were compared to acute and chronic SCDM benchmarks and appropriate background samples.</p> <p>Analytical results for sediment were compared to background sediment results. No benchmarks have been established for sediment.</p> <p>Note that some ESAT detection limits are higher than SCDM, Risk-Based Screening Levels (RBSLs), and/or Soil Screening levels (SSLs) for some substances.</p> <p>If contaminants are detected at the Upper Animas Mining District site at levels below 3 times background for those contaminants, then no removal or remediation needs to be done. If contaminants are present at the property at levels equal to or greater than 3 times background, further evaluation may be needed to further characterize the extent of the contamination.</p>	<p>Background sediment and surface water conditions were determined using a composite of 5 background samples.</p> <p>Statistical sampling was not performed because statistical sampling does not meet HRS goals; therefore, tolerance limits were not calculated.</p> <p>Soil (source) samples will be collected to identify potential contaminants and characterize potential areas of contamination.</p> <p>Surface water and sediment samples were collected to determine the mines' impacts on surface water and sediments.</p> <p>UOS TSOPs were followed, and any deviations from the FSP were documented.</p> <p>Issues requiring corrective actions, if needed, are documented in the Deviations section of this report.</p> <p>All data was reviewed, verified, and validated to ensure that they are acceptable for the intended use. Data was found to be acceptable for use.</p>	<p>Sample locations were selected based upon an understanding of known environmental conditions and required information. The following activities were performed on site to determine if sample locations needed to be adjusted:</p> <ul style="list-style-type: none"> <li>• Collect surface water and sediment samples to determine the extent of metals in Cement Creek and the Animas River and collect samples appropriately to provide information as to attribution from specific mines or gulches;</li> <li>• Progress from farthest downstream sample location to prevent cross-contamination;</li> <li>• Perform biased grab sampling in accordance with the TSOPs and site assessment protocols;</li> <li>• Identify potential human health and sensitive area targets for the Surface Water Pathway; and</li> <li>• Collect soil (source) samples to characterize waste materials present in mine dumps.</li> </ul> <p>Some sample locations were eliminated due to access issues or unsafe conditions. See the deviations section of this report for locations.</p> <p>Criteria for data quality parameters are presented in Section 12.0.</p> <p>Data followed the regional Instructions for Interim Emergency Response Electronic Data Deliverable and will include the recommended data elements.</p>	